IDG .com

Travel unravels Video-, audio- and Web-conferencing get a boost in light of travel cutbacks. PAGE 28.

Exodus goes bust Hosting pioneer opts for Chapter 11 bankruptcy in face of mounting debt. PAGE 8.

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

October 1, 2001 ■ Volume 18, Number 40

Slim budgets test users' creativity

■ BY JENNIFER MEARS

With the economy continuing to flag, many network executives are under the gun to stay within IT budgets that are either shrinking or growing more slowly than in past years.

ECONOMY ON THE EDGE

Second in a three-part series

They're responding by looking for bargains, lengthening buying cycles, automating network management, off-loading noncore projects to outsourcers and delaying noncritical undertakings.

"Our buying habits have changed since the beginning of the year. That's when we really started changing our focus, tightening down the budget and being more efficient with how we spent our money," says Gene Rekos, CTO at Teen.com. "We analyze things a little bit more in detail, and we take a little bit more time to make a final decision."

In this second part of a three-part series about the struggling economy's effect on the network industry, we find network executives embarking on new strategies, striving to meet the business guidelines some are facing for the first time.

"In the past they could get away with saying, 'This isn't about saving money; it's about avoiding costs or it's about

See Economy, page 16

Microsoft prepping Exchange for Web conversion

Messaging system to be key part of grand .Net plan.

■ BY JOHN FONTANA

ORLANDO — Microsoft this week begins integrating its Exchange 2000 Server into the vendor's all-encompassing .Net platform, and network executives will get a first-hand look at how Web services will transform the messaging and collaboration software.

At its annual Exchange conference, Microsoft will show how Exchange's functions can be called on by Web services, a way of cobbling together applications on the fly. Exchange features, including messaging, calendaring, workflow and tasks, currently have to be custom coded into individual applications.

The .Net platform is Microsoft's plan to offer software as a service available over the Internet to any device. Microsoft is betting its future on .Net and focusing $4 billion in research and development on .Net development tools, servers and software.

Traditionally a haven for administrators, this year's conference — which is expected to draw 5,000 attendees — will focus heavily on developing Web services. And while Microsoft plans to showcase the future, many IT executives are still battling or have yet to start Exchange 2000 rollouts, which need to be completed before Web services can become a reality.

But customers will begin to see where Microsoft is taking Exchange. With .Net, it becomes less of a self-contained server and more a component of the .Net infrastructure that includes Windows 2000, SQL Server, Mobile Information Server and BizTalk Server.

"Exchange becomes just one functional module in a bigger picture," says Jim Kobielus, an analyst with The Burton Group and a *Network World* columnist. "It provides core messaging services to

See Exchange, page 73

MORE MICROSOFT NEWS

Inside: Sun, others prep challenge to Microsoft's Passport single sign-on technology. PAGE 72.

Online: Watch for our coverage of Microsoft's Exchange conference online this week. **DocFinder: 6225** www.nwfusion.com

Start-ups aim to manage Web services

■ BY DENISE PAPPALARDO

ATLANTA — A new breed of service provider is aiming to help companies exploit Web services, an emerging software concept that may be as complex as it is intriguing.

Start-up Flamenco Networks last week became the latest company to launch a Web service offering that will let customers create applications by stitching together software components on the fly.

Web services, which are being promoted by companies from BEA Systems to IBM to Microsoft, will let applications or clients authorized to interact do so over the 'Net, often without human intervention.

While the idea behind Web services is to simplify application access, communication and integration by relying on a set of standards such as the XML and Simple Object Access Protocol

See Web services, page 14

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Five technologies with legs

If you're doing long-range planning, you need to know which technologies have staying power.

PAGE 43

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Review: VPN interoperability
We took 13 IP Security VPN gateways, plugged them into a full-mesh enterprise-level test bed and evaluated how well they talked to each other. The winner: Secure Computing's Sidewinder. **Page 47.**

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Interactive

New virus
The latest reactions to Nimda are in our "Under Nimda attack" forum. Read one person's account of battling the new worm.
DocFinder: 6244

Helpful hints
Unemployed? Downsized? With unemployment now the highest it's been in four years, IT executives who have never faced unemployment may have been recently laid off. Check out our layoff research page for loads of resources to find that new job. **DocFinder: 6245**

VPN
Growing numbers of remote and mobile workers requiring secure global connectivity, often over IP networks, are leading to explosive growth in encrypted and authenticated VPN technology. Our new VPN research primer has links to publications, forums and other resources.
DocFinder: 6426

Chapter 11
Find reaction to the Exodus bankruptcy news in our forum. Are users

Columnists

Home Base
Back to normal
Jeff Zbar details how teleworkers are getting themselves back to work since the Sept. 11 terrorist attacks.
DocFinder: 6256

Help Desk
Combatting Nimda
Ron Nutter helps a user lock down his Microsoft Internet Information Servers.
DocFinder: 6429

Keeping Current
Economics of terrorism
Fred McClimans ponders the state of our economy in the wake of the terrorist attacks.
DocFinder: 6250

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News Bits

Report: AT&T courting BellSouth

■ Published reports say AT&T is looking to merge with regional service provider BellSouth. AT&T and BellSouth representatives declined to comment last Friday on potential merger talks. Reportedly, AT&T President David Dornan proposed in mid-September a merger of equals with BellSouth, in which the two companies would form a combined entity to take on Verizon Communications, SBC Communications and other rivals.

Under the deal, code-named Brazil, AT&T would spin off its much sought after cable business and merge the rest with BellSouth. The value of the deal and the management of the merged company are reportedly still in negotiation.

An AT&T/BellSouth merger would undoubtedly face regulatory hurdles.

Rich get richer, sometimes

■ Microsoft paid Bill Gates, its chairman of the board and chief software architect, a total of $666,754 in fiscal year 2001, an increase of 4% over the previous year. Gates received a salary of $494,992 and a bonus of $171,762 in the 12 months ended June 30, according to a statement filed by the company with the U.S. Securities and Exchange Commission. CEO Steve Ballmer collected a salary of $494,076, a bonus of $171,444, and other compensation worth $5,100, the filing said.

Despite the "modest" raise, Gates remained the richest person in the world for the eighth year in a row, according to the annual survey by *Forbes* magazine of the 400 wealthiest Americans. All wasn't rosy for Gates, though, as his net worth fell to $54 billion this year, down from $63 billion last year. Mega investor Warren Buffett moved into second place, followed by the other Microsoft co-founder, Paul Allen. Oracle CEO Larry Ellison dropped from second to fourth.

Kournikova virus maker found guilty

■ The maker of the Anna Kournikova e-mail worm that spread in February was sentenced Thursday to 150 hours of community service or, if 21-year-old Jan de Wit chooses not to perform the community service, to 75 days in jail. In addition, a CD-ROM containing thousands of viruses that was confiscated from him will not be returned, the court in Leeuwarden, Netherlands, said. The ruling is the first verdict handed down against a virus maker in the Netherlands and one of the few such verdicts in the world. The FBI sent the court a report saying it had identified 55 Kournikova victims who had suffered $166,827 in damages.

Watch out for flare-up

■ A major solar flare is expected to pass over Earth on Tuesday and could cause some electric power outages and disruptions of telephone service and satellite TV signals. Experts at the NASA Goddard Space Flight Center say a fast-moving flare exploded from the sun about 5:30 a.m. last Monday. The flare sent out a large cloud of solar magnetism, which is expected to reach Earth late Tuesday afternoon or early evening. Experts say power grids, ground-to-satellite communications and electronic navigation systems could be disrupted.

Judge tells Microsoft, DOJ to sit down and talk

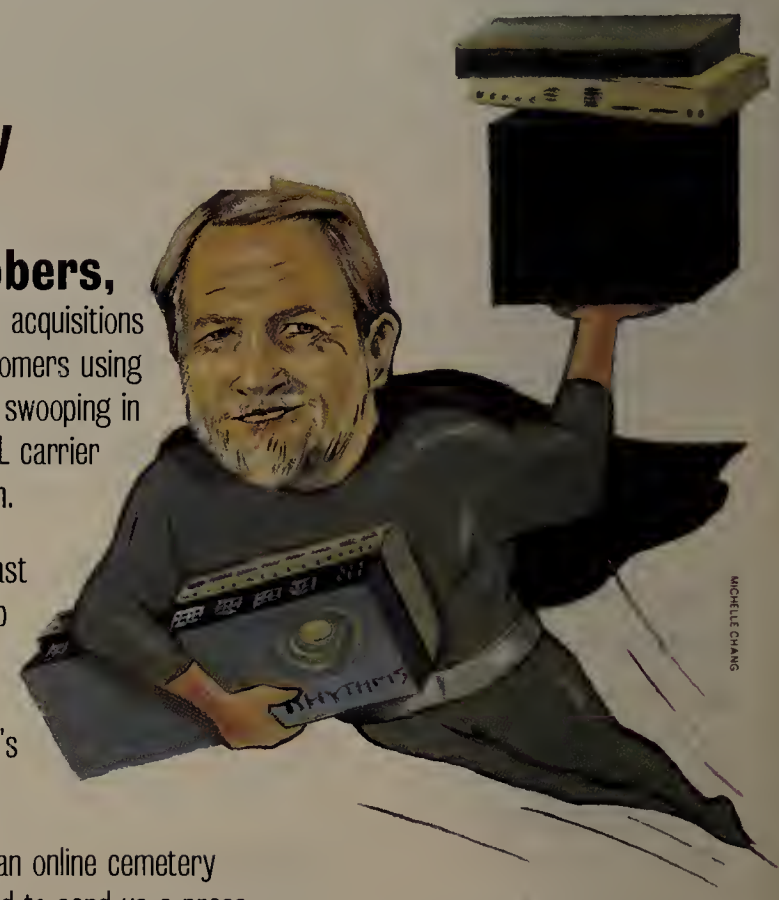
■ Confident that the Department of Justice and Microsoft can come to a fair agreement, U.S. District Court Judge Colleen Kollar-Kotelly last week ordered the two sides in the antitrust case to enter into "intense settlement discussions" between now and Nov. 2. During a status conference at the U.S. District Court for the District of Columbia, Kollar-Kotelly said she expects the sides to work 24 hours a day, seven days a week, and to be reasonable in order to come to an agreement that satisfies both parties. If no settlement is in view by Oct. 12, the two parties are ordered to submit to the court the name of a mediator to assist them, or the court will appoint one if an individual cannot be agreed upon, the judge said. If the two sides still cannot come to agreement by Nov. 2, the judge proposed a schedule for continuing with the remedy phase of this case through the first part of 2002. Kollar-Kotelly is charged with deciding what remedies should be applied to Microsoft to break its monopoly grip on the operating system market.

The Good The Bad The Ugly

WorldCom and **CEO Bernie Ebbers,** while not sporting the best track record with past acquisitions and attempted buyouts, appear to have done customers using Rhythms NetConnections' network a good turn by swooping in and scooping up equipment from the bankrupt DSL carrier and keeping high-speed 'Net service alive for them.

Trouble with **AT&T's** authentication servers last Tuesday shut out hundreds of thousands of dial-up Internet users across the carrier's U.S. network. Of course many of those users would prefer to have broadband access in the first place, but that's another story.

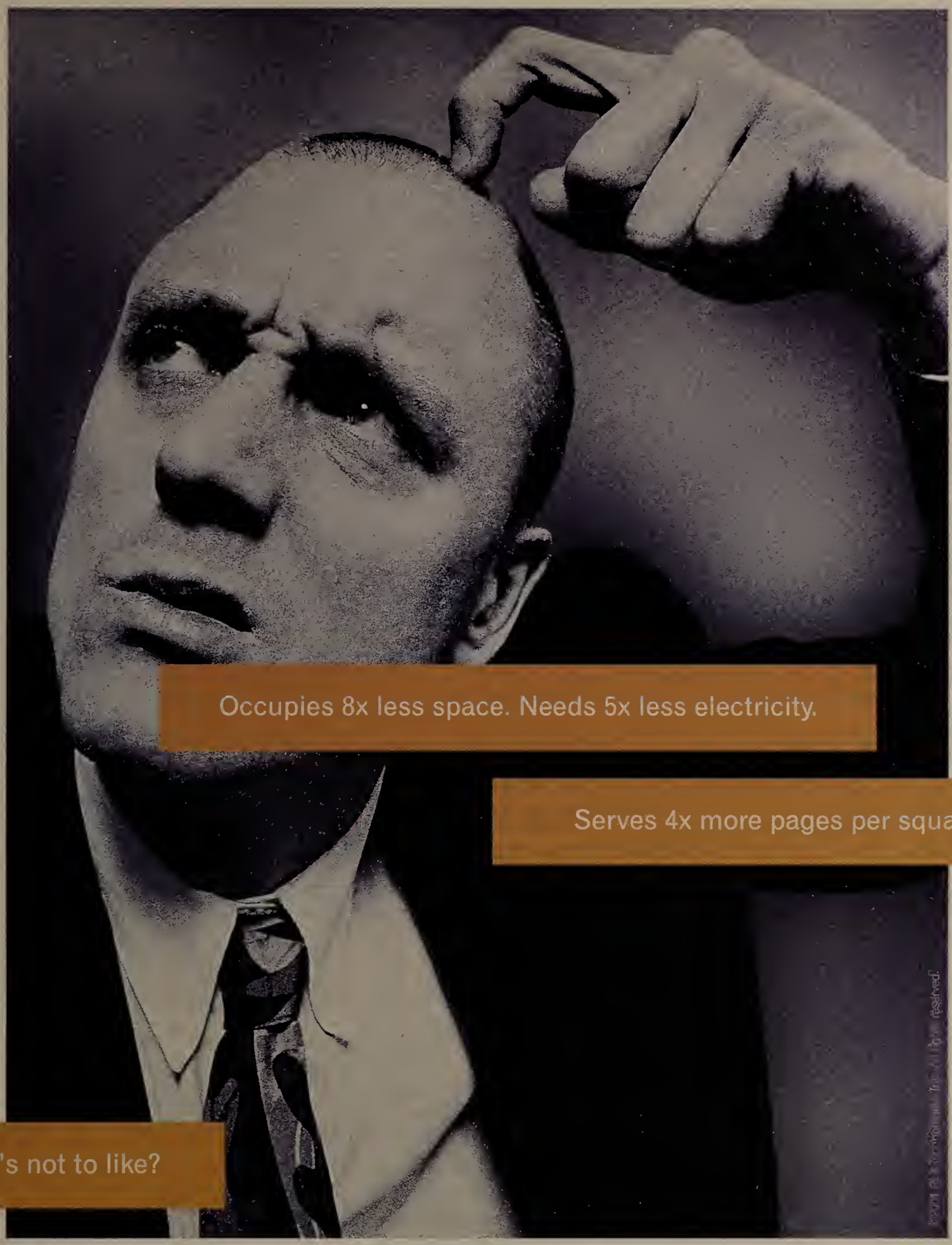
Universal Plot, a company that runs an online cemetery complete with DNA storage services, just happened to send us a press release on its business last week — assuring us that we shouldn't read anything into the timing in light of the recent terrorist attacks.



Cisco seeks E.piphany

■ Cisco and E.piphany last week announced that they are joining forces and bundling a variety of their software products in an effort to make customer contact centers smarter. A package combining Cisco's customer-contact software platform and E.piphany's E.5 suite of Web-based customer relationship management applications is available immediately, the companies said. E.piphany's customer intelligence platform will be added in December.

The combined software package is designed to help traditional customer call and support centers offer customer contact operators real-time access to customer data, allowing for better service. Financial details of the agreement were not disclosed. The name of the software package and pricing were not available.



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Hosting pioneer Exodus waves a white flag

■ BY JENNIFER MEARS

SANTA CLARA — Exodus Communications, the firm that virtually invented Web hosting and went on to become a darling of the Internet boom, has filed for Chapter 11 bankruptcy protection in an attempt to reorganize its balance sheet and shed its crushing debt.

The company jumped into the nascent e-business scene in 1994 and quickly cornered a leadership position in the fast-growing Web hosting market. In its rush to build out data centers and garner market share, Exodus took advantage of the friendly capital markets and amassed $3.5 billion in debt. But then the bubble burst. Some of Exodus' biggest prospects — dot-coms and application service providers — began to fold, and the capital markets dried up.

So while Exodus continued to sign new customers and managed to post revenue that analysts say pushed it to break even, it struggled under its heavy debt load. Interest payments alone cost $80 million per quarter, according to financial analysts.

CEO William Krause, who took over less than a month ago after founding CEO Ellen Hancock abruptly resigned, determined Chapter 11 was the only way out. While in bankruptcy protection, Exodus will not be responsible for the interest payments or other debt accrued before the filing, Krause says.

The task now is to negotiate with creditors and come up with a plan to emerge from bankruptcy protection. As an example of how it can be done, Krause points to Covad Communications, which recently filed for Chapter 11 with a prepackaged deal that eliminates its debt, giving bondholders 19 cents on the dollar and preferred stock in the company.

When it filed for Chapter 11 in U.S. Bankruptcy Court in Wilmington, Del., last week, Exodus listed $5.9 million in assets and $4.4 million in liabilities. It also said it has $200 million of new debtor-in-possession financing from GE Capital, contingent on bankruptcy court approval, which will help keep the company going.

Exodus is the biggest Web hoster in the market with more than 4,000 customers, including some of the biggest names in the business such as Yahoo, eBay and Microsoft. It has 5.6 million square feet of space in 44 data centers worldwide, but analysts estimate it's running at a 30% utilization rate, and as low as 10% in some facilities.

"Their business model was essentially building ahead of demand," says Jay Slattery, an analyst with Technology Business Research. "There was this expectation that the demand for data center space was going to continue to grow exponentially. So when this demand didn't materialize, they were stuck with all these data centers."

Exodus even continued to build out after demand had slowed: Last year it acquired Global Crossing's hosting subsidiary, Global Center, and opened four new data centers in the second quarter of this year.

"They started putting customers in newer data centers without filling up the ones they had," says Andrew Schroepfer, president of Tier 1 Research. So as the market started falling off, they had a portion of each center in use and couldn't turn any of the center back to the market, he says.

Analysts say Exodus is a bellwether of the hosting industry, which now must focus on reaching profitability rather than building out facilities and chasing market share.

It's a focus Krause says he's committed to.

"The fundamental focus for Exodus is managing for profitability vs. revenue growth at any cost," Krause says. "During the dot-com boom, it was market share and revenue growth at any cost. And it's easy to get caught up when the line is going from the lower left to the upper right at a 60-degree angle that it's going to go on forever."

It didn't go on forever — but that doesn't mean the Web hosting business is inherently flawed, analysts say. Market research firm IDC estimates the market will grow from $7 billion this year to nearly $25 billion in 2004. Much of that revenue comes from higher-revenue-generating managed services that are demanded by larger enterprise customers. Exodus has been moving into that area, distancing itself from its dot-com customer base and its roots in collocation, in which it provided nothing more than living quarters for Web servers. In the second quarter, the company reported 63% of its customers were corporations compared to 45% a year earlier.

Analysts say Exodus must hang on to that customer base as it restructures. Already, some customers are planning to move out of Exodus' facilities, although most seem ready to stick it out, albeit with contingency plans in place.

"We have been in close contact with Exodus and we don't anticipate Exodus' filing for bankruptcy will have any immediate or significant impact on Yahoo service," says Kevin Pimmons, director of operations at Yahoo.

"We understand [last week's] events are a positive step for Exodus, and we will remain a partner of theirs," he adds. ■

More online!

Q&A Exodus' new CEO William Krause

• Mistakes made • What's left • Keeping customers

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The writing on the wall

Exodus' many trials and tribulations:

EXODUS®

April 26
Exodus posts $118.3 million Q1 loss and cuts capital expenditures by $300 million.

April 30
CFO Marshall Case resigns.

May 1
Exodus confirms COO and chief marketing officer are leaving.

May 9
Exodus announces it will cut 675 jobs, or about 15% of its staff.

June 20
Exodus lowers its revenue projections and announces another round of layoffs.

July 26
- Exodus posts Q2 loss of $138.5 million.
- Exodus reports cash reserves of $616 million, down from $1 billion at end of Q1.
- Exodus says it expects to end the year with $200 million in cash, but says it is looking for more funding.

April 2001

August 7
CEO Ellen Hancock tells *Network World* Exodus would consider take-over offers.

August 23
Three members of the Exodus board of directors step down.

September 4
Hancock abruptly resigns, board member William Krause takes over as chairman and CEO.

September 26
- Exodus files voluntary petition to reorganize under Chapter 11 of the U.S. Bankruptcy Code.
- Exodus receives $200 million from GE Capital, pending bankruptcy court approval, to help fund operations during restructuring.

The Scoop

The news behind the news

Bankruptcy basics

Many people believe that filing for bankruptcy protection means "the end" for a business. While that's true in a Chapter 7 bankruptcy filing, in Chapter 11, filing for bankruptcy is only the first step in a process that can see the business reorganized, sold to another company or liquidated.

In a Chapter 7 filing, the business is committed to liquidating its assets. A trustee is put in charge of the business, sells the assets and tries to satisfy the demands of any creditors.

"If there's no prospect of reorganization, businesses will file for Chapter 7," says Christian Onsager, general counsel to The Broe Companies in Denver and a faculty member of the American Bankruptcy Institute, an organization dedicated to bankruptcy research and education.

In a Chapter 11 filing, the management of a business maintains control and can either liquidate the company or file a reorganization plan.

The reorganization involves negotiating a deal with creditors. Even if creditors refuse to accept the terms of the reorganization, they can, under certain circumstances, be forced to make a deal with the company.

Many reorganizations involve creditors getting a fraction of what they are owed in cash as well as some stock in the bankrupt company.

As part of the reorganization, bankrupt firms can sell off certain assets or business units. If a reorganization won't work, the company can be liquidated.

— Michael Martin

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The Leader in Wireless Broadband Networking

Pack links internal and external net security

■ BY ELLEN MESSMER

Secure Computing this week will announce an authentication server package that eases security administration and improves the vendor's current product by allowing internal and external Web access to be managed via one server and one database, rather than two.

The SafeWord PremierAccess server and agent software will let customers centrally manage access to intranet and extranet resources while adding support for new authentication technologies such as SafeWord's so-called virtual smart card software. That code can be downloaded from the SafeWord server running on Windows NT or Unix-based boxes onto a laptop or PC's computer chip so the device can authenticate itself. Customers beta-testing this authentication say it provides an extra layer of security when combined with other authentication processes, such as simple password or digital certificate.

PremierAccess also includes a centralized database to store information about all the authentication types used within an organization, something lacking in the earlier version.

"Before we had separate databases [that controlled] Web access for internal systems and external ones," says Patrick Prue, manager of network services at Fanton Technologies, an Ontario manufacturer of floor-care products. "This is much more flexible and lets us have one centralized user database."

Prue says his staff allocates simple, reusable passwords to most employees. But passwords, all too easily shared, are not considered particularly strong authentication. Better security is provided through so-called handheld tokens, such as Secure Computing's Silver device which can generate a one-time dynamic password. Prue distributes these tokens to many Fanton employees needing access to sensitive information. But these tokens have their own set of issues, they can

See Secure, page 16

Tools to spotlight net performance

■ BY DENISE DUBIE

ALVISO, CALIF. — ProactiveNet plans to release by year-end three tools to help companies measure the performance of their networks in new ways.

ProactiveNet will unveil two products, ProactiveAssurance and ProactiveWeb, and update its flagship ProactiveNet performance monitoring software.

ProactiveAssurance software measures how a new application affects a network's performance. Hurwitz analyst Jasmine Noel says that in the past companies painstakingly tested new applications before deploying them on a live network, but with time demands on companies to get up and running on the Web, the test phase has shortened.

"Usually, the network people discover this new code or application after there's been a huge problem," Noel says. ProactiveAssurance lets users see the impact of a new application on the network, rather than work with the predictions that net modeling software may offer.

"The data is real, and it's from the live network," she says. "Predictive software . . . can never cover everything."

ProactiveAssurance will cost less than $25,000.

ProactiveWeb monitors response time for Web transactions. Although companies such as Keynote can tell users how their network performs from other points on the Internet, ProactiveNet says those statistics come from simulated transactions, not real Web site performance data.

ProactiveWeb is designed to give small users an idea of their Web site's performance for $1,000. The software uses one agent to monitor up to 50 Web site transactions.

ProactiveNet's flagship software uses statistical analysis to determine the normal operating behavior of networks, applications and servers, and alerts network managers when abnormal patterns have occurred. This information can help users prevent a problem before it slows network, application and Web site performance, the company says.

The new version of ProactiveNet would be installed on a server, communicating with software agents on the servers to be monitored. The agents process no data and sit dormant until ProactiveNet software requests specific performance data.

Although ProactiveNet says its software can be used as the main root-cause analysis tool on a network, the software also will work with Hewlett-Packard, Computer Associates, Tivoli and BMC.

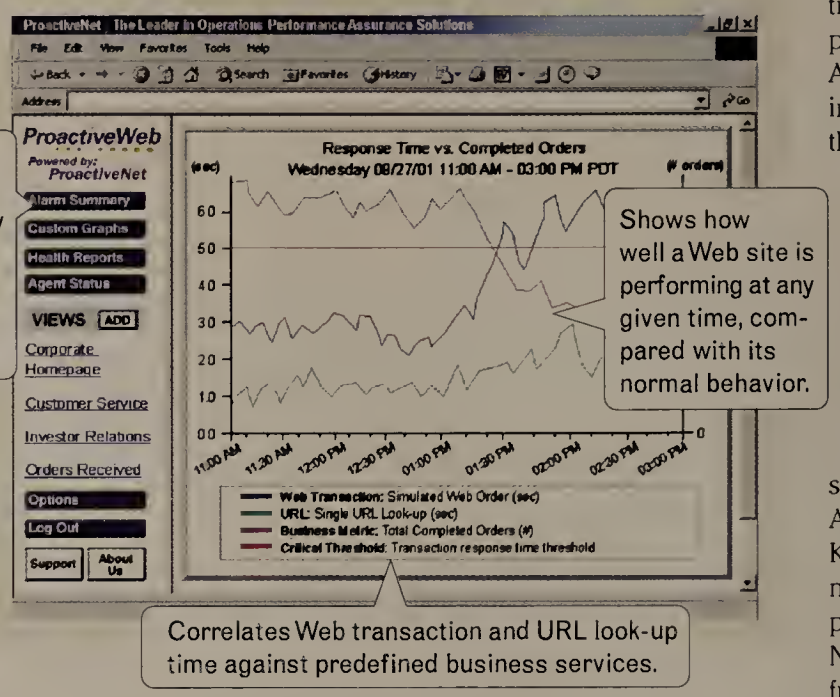
"It gives users the ability to know what's a problem and what's just another alarm," Noel says. "It will prevent net manager from having to get up at 3 in the morning every time the network crosses some threshold."

ProactiveNet 4.1 costs between $50,000 and $150,000.

ProactiveNet: www.proactivenet.com

Proactive performance

ProactiveWeb tracks the response time of Web transactions.



Filters alarms and alerts net managers only of abnormal behavior affecting Web transactions.

Shows how well a Web site is performing at any given time, compared with its normal behavior.

Correlates Web transaction and URL look-up time against predefined business services.

IBM bolsters WebSphere

New programs support more third-party applications.

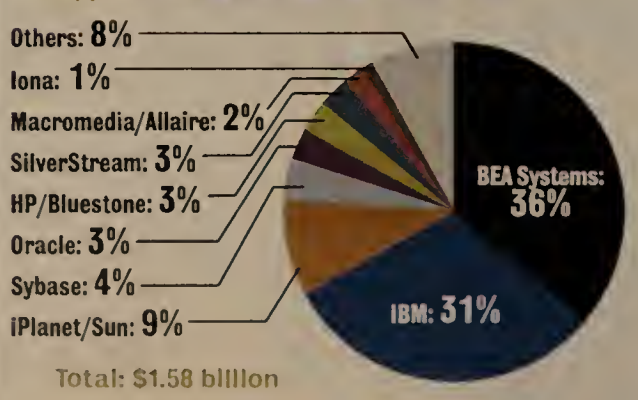
■ BY KATHLEEN OHLSON

SOMERS, N.Y. — With an eye toward helping businesses integrate, grow and manage Web software and services, IBM last week enhanced the programs that support its flagship WebSphere applications server.

The new programs run in conjunction with IBM's WebSphere 4.0 Server program, released in June. The enhanced programs, Enterprise Edition 4.0, WebSphere Edge Server and Site Analyzer, promise to help customers better integrate disparate applications, more effectively analyze browsing behavior and improve overall Web site performance.

Big Blue makes gains in app server market

According to a Giga forecast, IBM will close in on BEA Systems' lead in 2001, with a 34% share compared with BEA's 36% share. This is what the appliciation server market looked like last year:



WebSphere Enterprise Edition 4.0 features a new set of snap-on modules that would integrate disparate enterprise applications such as SAP's customer relationship management programs and IBM's CICS transactions.

The modules also let users integrate ActiveX, C++, Corba and non-Java applications. The package includes a tool called Business Rule Beans that lets businesses tweak and reuse software without rewriting entire sections of code.

WebSphere Enterprise Edition also includes the ability to identify which country users are logging on from, displaying the appropriate time zone, currency conversion and language for customers.

IBM says the idea is to help users coordinate multiple transactions that support Java 2 Platform Enterprise Edition (J2EE) and popular Web services standards to process e-business communications more effectively.

Edge Server 2.0 features load-balancing capability that lets users distribute application workload evenly across IBM Web servers on a network. Here, IBM is hoping to bolster Web site availability and performance. Edge Server prioritizes traffic and implements quality of service based on what content is being accessed.

Finally, Site Analyzer 4.0 will let businesses trace and more effectively analyze customer behavior on their sites.

IBM is trying to catch up to BEA Systems, while keeping a leg up on other companies also clamoring for application server customers. According to a Giga Information Group study, revenue of J2EE application servers totaled $1.58 billion in 2000.

Pricing for WebSphere Enterprise Edition 4.0 is $35,000, and $20,000 per CPU for Site Analyzer.

Edge Server starts at $10,000. ■

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WorldCom, SBC go DSL shopping

Purchases of Rhythms, Prodigy could boost broadband access offerings.

■ BY MICHAEL MARTIN

WorldCom and SBC Communications have strengthened their Internet services arms — WorldCom by picking up bankrupt DSL provider Rhythms NetConnections and SBC by acquiring what it didn't already own of ISP Prodigy.

The WorldCom deal has immediate impact, because officials say WorldCom will keep remaining Rhythms customers in 31 markets up and running. It also helps fill a void in the service provider's product portfolio, analysts say.

For $40 million — considered a bargain by observers — WorldCom picked up most of Rhythms' assets, which include 700 central offices in major markets.

Rhythms filed for Chapter 11 bankruptcy protection in August and planned to shut down its entire network in early September. However, the Federal Communications Commission stepped in and ordered the provider to maintain service. That order ended the same day WorldCom revealed its bid.

The purchase represents a minor victory for the FCC, which had tried to avoid a repeat of the shutdown of DSL provider NorthPoint Communications earlier this year. NorthPoint's demise left tens of thousands of DSL users with no service.

WorldCom and Rhythms already had a close relationship. WorldCom owned a minority stake in the carrier and resold Rhythms' DSL service. Although WorldCom already had some DSL customers, the numbers were not that impressive, says Adam Guglielmo, an analyst with TeleChoice.

DSL in demand

Fresh acquisitions by WorldCom and SBC could help them gain larger shares of a DSL service market expected to triple from 4.5 million subscribers this year to nearly 14 million subscribers by 2004.

SOURCE: TELECHOICE

"This helps round out their product line," Guglielmo says. "They can give enterprises another option for their branch offices and telecommuters."

While Rhythms' customers should be happier now that they have a carrier with deep pockets providing service, it remains to be seen whether WorldCom can be more successful making money off DSL than Rhythms was.

"The issues are still there," says Matt Davis, an analyst with The Yankee Group. "It's still a question of whether they can get enough penetration into each facility to pay for the DS-3 backhaul."

Interexchange carriers such as WorldCom have been relatively unsuccessful in penetrating the DSL market until now, deploying just 26,000 lines in the U.S., according to TeleChoice. That figure compares with 3 million rolled out by incumbent local exchange carriers and 500,000 by competitive local exchange carriers.

Meanwhile, SBC's offer to buy the remaining outstanding shares of Prodigy for about $378 million cements what was already a close relationship between the regional Bell operating company and ISP.

The closer ties to Prodigy could add marketing expertise and customer service to bolster SBC's DSL efforts, Guglielmo notes. But any change will be felt in the residential, rather than the business services market. ■

Siebel to unwrap CRM suite

■ BY ANN BEDNARZ

CHICAGO — Dave Martinson is traveling to Chicago this week for one thing: To see Siebel Systems roll out its long-awaited Siebel 7 customer relationship management package.

"We will definitely upgrade," Martinson says. He is vice president of the Upper Midwest Siebel Users Group and a software manager in charge of internal CRM applications at Microsoft Great Plains, where 850 to 900 employees and partners use Siebel's salesforce automation software.

How quickly the Great Plains division upgrades depends on what Martinson sees at the Siebel Worldwide User Week conference and whether the new edition meets his company's expectations, he says.

What he'll see is Siebel 7 eBusiness Application Suite, which features a Web-based architecture that Siebel promises will speed its CRM deployment and ease application administration. The Siebel 7 portfolio will be delivered through a Web browser without requiring code to reside on every client.

For network executives, Web-based deployment translates into easier, less costly software deployments, says Richard Gorman, a Siebel vice president.

It's an improvement for end users too, Martinson says. "Users will get the most recent features much quicker because we'll be able to deliver patches and upgrades to them much quicker," he says.

The Web-based application suite also will appeal to midsize companies that are looking for less-complex applications from Siebel, the market leader in large enterprise CRM.

AMR Research analyst Kevin Scott says Siebel 7 makes strides in the right direction. "It's easier to host, it's easier to manage," he says. "Companies don't need a huge IT staff to maintain it."

Additional highlights of Siebel 7 include:

- Unicode support. New in Siebel 7 is support for the Unicode standard — which defines a single set of characters for all written languages — across IBM DB2, Microsoft SQL Server and Oracle databases. This lets companies store multiple languages in a single database.
- Upgrade shortcuts. With its new "one-button upgrade" tool, Siebel lets users copy software customizations and changes created in a previous version of Siebel's software to Siebel 7, Gorman says. Embedded process rules, such as how a pricing change is approved, don't need to be re-created in the new version.
- Access for disconnected users. With Siebel 7, mobile users can work from a locally stored database — with the same user interface — when they are unable to make a network connection. Siebel's Web client uses a JavaScript engine that creates the feel of a Windows-based application with pull-down menus, while it reduces the amount of information that must travel over the network, the company says.
- E-mail management tools. Siebel added new e-mail analysis and autoresponse capabilities to its service applications. For example, a call center agent's answers to customers' questions could be automatically stored and then shared with other agents, or used as a standard reply when similar questions are asked.
- Wireless enhancements. Support for Wireless Application Protocol and voice recognition will let users access Siebel applications from cell phones and PDAs.

Siebel 7 will be available before the end of November. Vertical applications will follow 60 to 90 days after that, he says. ■

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Corrections

■ The story "10 Gig enterprise infiltration" (Sept. 24, page 58) should have stated that Cisco announced 10 Gigabit Ethernet modules for its Catalyst 6500 switch and Cisco 7600 router last month.

■ In the story "Has Cisco's AVVID lived up to the early hype?" (Sept. 17, page 20), Village Care says comments from one of its employees were misinterpreted. The organization says it is not looking to replace existing Mitel equipment with Cisco gear.

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Trio squares off with new Unix servers

■ BY APRIL JACOBS AND DENI CONNOR

NEW YORK — Users will soon have the luxury of high-end, mainframe-like server features — including the ability to handle large volumes of electronic transactions — with a new generation of powerful servers from IBM, Sun and Hewlett-Packard.

IBM is set to roll out its high-end server, dubbed Regatta, this week. Sun introduced its Sun Fire 15K server last week, while HP debuted its HP Server rp8400. HP already ships its Superdome, a high-end Unix box that competes in this arena.

The servers are also designed for high-end database transactions and performance-intensive scientific applications. They feature mainframe-like characteristics, such as partitioning, which lets customers divide a system into logical parts that can run multiple operating systems or applications.

Other advanced features, such as the ability to rapidly recover from memory failures, provide capacity on demand and load balance work across multiple internal processors, also permeate the new servers.

The guiding principles behind this bracket of boxes are to help users reduce maintenance and support costs by consolidating low-end, highly distributed server farms and, at least in Sun and HP's cases, replace mainframe systems that can cost millions to maintain. Analysts say Sun in particular will target IBM's mainframe business.

"Sun wanted to target some of these IBM mainframe sites that are looking at how they might move forward," says Jean Bozman, a research director with IDC. "This machine can take on a lot of the roles traditionally handled by IBM mainframes."

For its part, IBM says mainframe sales continue to grow and that its zSeries boxes can more than handle any high-end Unix applications.

As for the new servers, IBM declined to comment on Regatta, but published reports say it will feature up to 32 of the company's Power 4 processors and

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Web services

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(SOAP), managing the whole process could prove to be more trouble than it's worth. That's where companies such as Flamenco and newcomer Grand Central Networks, which made its debut in June, come in.

"This is [electronic data interchange] on steroids," says Gartner analyst Daryl Plummer, referring to the technology that dominated online business-to-business communications before the Web emerged.

Don't think of Web service companies such as Flamenco and Grand Central as updated versions of the old value-added networks on which EDI users relied. Those older networks didn't work over a public network such as the Internet and also didn't manage business relationships to the extent that these new networks do, Plummer says.

He says it would be "a real killer" if the new networks turned out to be closed communities, like so many value-added networks, where "you can only access Web services if you're part of the 'right' network."

Flamenco, led by Bell Labs veteran David Spicer and a crew of application vendor alumni, has designed a network service that relies on a centralized site for handling management chores, such as billing and security, and peer-to-peer technology for supporting communication between applications. Beaten to its first choice for a company name — Tango — executives instead chose the name Flamenco because it's a coordinated dance that relies on parties working together. The company has nabbed between $5 million and $10 million in financing from Noro-Mosely Partners and Cordova Ventures.

To use Flamenco's services, companies register at Flamenco's Web site, which relies on a centralized management system at a data center in Atlanta that's connected to the Internet (or to private networks if the customer prefers). Users specify which companies will access their Web services and under which rules.

For example, a retailer looking to streamline its buying process could tie its purchasing system into Flamenco's network and give distributors and suppliers access to its Web services. The retailer could define rules for buying merchandise based on price, day or quantities, and then let its applications interact automatically with those of its business partners.

Each site accessing Web services must first download proxy software that runs on a Web server and gathers information about the Web services traffic that's sent to and from that site. It's also used in the distribution and verification of X.509 digital certificates, which are used to secure transactions.

Flamenco acts as its own digital certificate authority, which lets the service provider issue, authenticate and revoke certificates. The only other requirement is that the applications are SOAP-enabled.

While Gartner's Plummer points out that most companies have not begun to exploit Web services, many already use software that has been upgraded to support it. Gartner estimates that the industry will spend $4.1 billion on products that support Web services this year. Flamenco charges for its service based on the number of connections to its network. A company that signs up for 100 connections would pay about $4,000 to $4,500 per month. Flamenco also charges a one-time set-up fee of $100,000.

Grand vision

Grand Central's aim is similar to that of Flamenco's, although the companies' services are offered in a different way.

Grand Central, which has secured $10.5 million in funding, has set up eight points of presence (POP) on the Internet that house management servers and interconnect with a Grand Central hub where all customer information is stored. Customers' SOAP requests for a Web service connection first hit a Grand Central POP, which verifies each user's request and matches it against previously established rules.

The POPs update the central management hub with information about traffic delivery and usage. Users can access this central management site via the Internet to check on data delivery and status of requests between Web services. Unlike Flamenco, Grand Central does not require customers to run proxy software on their sites.

Grand Central's service works with applications that support SOAP or the Web Service Description Language, but also provides a gateway for older applications that may not have been upgraded.

Gartner's Plummer says it's not clear whether Grand Central's or Flamenco's approach is better. Some users will prefer peer-to-peer connections such as Flamenco's, but others won't want to deal with installing the additional software required to support that method.

Putnam Lovell Securities has worked with Grand Central for the past six months to integrate its customer relationship management application from Salesforce.com with Blue matrix, an application that manages the content, creation and workflow of research. Bluematrix supports SOAP, but Salesforce.com does not, says Rodric O'Connor, vice president of technology at Putnam.

"Grand Central allows us to build connectors to do a screen scraping that gathers data from Salesforce.com through an XML API. Before we had to do a manual export from Salesforce.com, manipulate that data into an Excel file and download that content to Bluematrix. It was very time-consuming," he says.

The managed Web services setup lets Putnam easily and quickly distribute research to clients, O'Connor says. The company is also talking with other application service providers (ASP) it uses to link their separate systems via Web services.

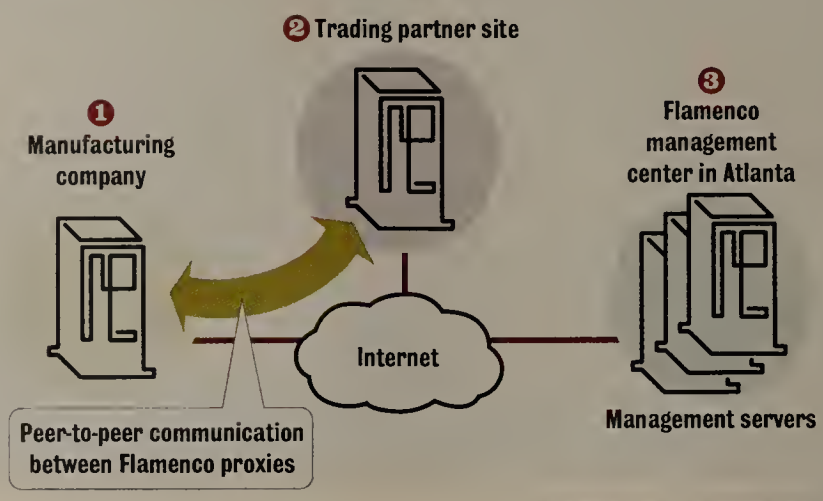
Grand Central's service costs $2,500 per month for five connections and $5,000 per month for 25 connections. There is no upfront set-up fee.

Although Flamenco and Grand Central are the first service providers with focused Web services networks today, the market is expected to get crowded quickly, Plummer says. Expect to see ASPs and other service providers claiming they offer similar services. Management and application integration software vendors such as Hewlett-Packard and IBM could even get into the act, he says.

Flamenco: www.flamenconetworks.com; Grand Central: www.grandcentralnetworks.com

Doing the Flamenco

Start-up Web services provider Flamenco aims to help companies tie key business applications with those of trading partners.



1 Flamenco proxy software resides on a Web server at each site to be linked. The proxy maintains customer-defined rules centrally managed by Flamenco.

2 A typical rule could be the schedule for when trading partners will communicate inventory data. The communications is direct, peer-to-peer.

3 Customers can access Flamenco's management site to access statistics about traffic delivery and Web services usage, including response times.

■ THIS WEEK'S QUESTION:

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Economy

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improving our position in the market,'" says Barbara Gomolski, a research director at Gartner. "They have the same amount of budget, but they don't seem to have the level of discretion in terms of what they do with it."

But those budgets may be shrinking. Last month's terrorist attacks have prompted research firms to cut their estimates of IT spending even further. A Gartner study released in July found that more than half of the companies surveyed plan to increase IT spending an average of 10% this year. In the wake of the attacks, Gomolski suspects that growth may drop to around 5%.

But the biggest effects will be seen in 2002, when Gartner predicts a 5% IT spending increase as a best-case scenario and a 3% drop as a worst case. Companies in the hardest-hit sectors, such as the travel and insurance industries, could cut IT spending by 10% or more, Gomolski says.

"It may take four to six weeks to pull the trigger on a sale if it's a noncritical piece of equipment, just so we can get the best deal."

Jeff Wenger
CTO, Tax Technologies

Other research firms paint an equally dim picture. Merrill Lynch predicts that IT spending will grow only 5% in the U.S. this year, below the 9% growth it initially forecast in January. A Merrill Lynch note issued Sept. 19 said it was too soon to gauge CIO reaction to the terrorist attacks.

"Certainly, the [terrorist attacks] have halted a number of noncritical projects," says Jeff Wenger, CTO at Tax Technologies, a tax software firm in Haworth, N.J. "However, we remain optimistic that this will be a short-term impact and anticipate minimal impact on our long-term strategy for growth."

At Teen.com, Rekos has already done more with less, after layoffs in January and June that closed two business units, cut 200 employees and trimmed his IT staff.

And Mark Hoffman, application systems architect at Tufts Health Plan, says he is managing his firm's transition into e-business "with a flat or reduced budget."

Even where network budgets haven't been affected, spending habits are changing. Staples, for instance, is looking for better deals. "We are doing better in various deals with our vendors or partners than we would have anticipated," says Max Ward, Staples' vice president of technology. "Technology vendors feeling the squeeze of the economy and the squeeze from the competition has definitely benefited us."

Tax Technologies, which buys most of its hardware from Dell, has saved about 15% on servers and equipment, and the company takes its time to get the best price, Wenger says.

"We tend to hold out for a deal a little bit more now than we may have in the past," he says. "It may take four to six weeks to pull the trigger on a sale if it's a noncritical piece of equipment, just so we can get the best deal." Previously, the company would have placed orders almost immediately after identifying a need.

Because of recent budget constraints brought on by both the economy and changes in federal Medicaid funding, Jim Olson, CIO of Waterbury Hospital in Connecticut, is holding off on some projects.

Olson won't be upgrading his Cisco switches from Layer 2 to Layer 3 this year, saying the financial return on such an upgrade would not be felt for a few years. "We might have done that in the past, given the money we usually had, just to make sure our infrastructure is staying a little bit ahead of demand."

Instead, Olson says he is looking into a computerized, document management system. The return on the project will be more immediate, he says, because the system would save the hospital "a few hundred thousand dollars a year" on its medical forms budget, which runs around $1 million annually.

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Doing more with less

Other firms are looking for innovative ways to get a bigger bang for their network bucks. At Teen.com, Rekos is using existing hardware in new ways and buying from vendors that sell used and remanufactured equipment.

Rekos uses a load-balancing switch among a cluster of older servers to get the performance he needs. "We can get the same kind of horsepower that we would with a new server," he says.

David Rich, global managing partner at Accenture, says network executives can also look at automated management software to do more with current network staff and infrastructure.

Some companies have made staff cuts, "but now it's time to re-engineer the work out of the business," Rich says. "That means getting more done with fewer people, and that usually means having to do process automation."

Paul Edmunds, senior network analyst with Duke Energy in North Carolina, says network management tools are invaluable, especially in tough economic times. Duke Energy has used Hewlett-Packard's OpenView network management software since the early 1990s, and cost savings were a big reason for installing it, he says.

"We can do a lot of remote troubleshooting and remote problem-solving without having to dispatch a technician. That's a pretty big savings," he says. Edmunds wouldn't estimate cost savings, but says he would "absolutely" install network management software now, if it weren't already in place, to help his network run better in today's economy.

Outsourcing

Another way network executives are looking to trim costs is through outsourcing. Hoffman is in the process of determining what to outsource. He has outsourced the Tufts Health Plan home page since the beginning of the year. He saves an estimated $450,000 in initial outlay and operations costs, and plans to outsource more.

Rekos, on the other hand, is contracting for specific resources, such as programmers, rather than handing off entire projects. He wouldn't estimate how much this type of outsourcing saves him, except to say the savings are significant because he doesn't have to hire people and pay benefits.

Return on investment is what all network managers should focus on, Gartner's Gomolski says. She says they should actually expect slower growth in their budgets and may find those budgets pulled out of their hands and placed under the direct discretion of the CFO.

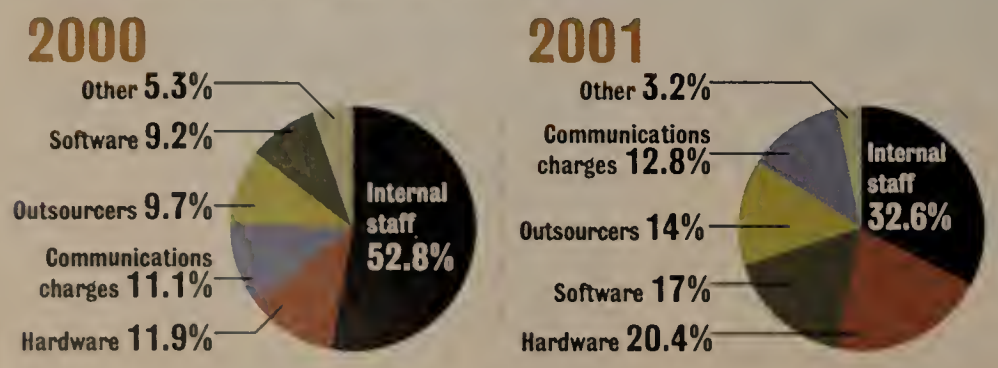
"Regardless of how well they make their case — many IS managers will have a difficult time getting funds for projects that don't offer immediate payback through the first quarter of 2002."

Next week: the impact on industry innovation. ■

Shifted priorities

In a recent survey, Gartner found that companies are spending much less of their budgets this year on their own IT employees, and more on outsourcers and consultants. A bigger portion is also going toward software and hardware, reflecting an emphasis on improved tools and infrastructure at the expense of IT staff.

IT budget distribution by resource category



Secure

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be lost or left tied to a cord next to the user's computer. "These tokens aren't cheap to replace. They can be anywhere from $50 to $100," he says.

He says that's one reason he's interested in using the new SafeWord virtual smart card technology. By installing the virtual smart card software onto the laptop or PC, each time the user seeks to access the network, the device will authenticate itself against the SafeWord authentication server by generating a one-time password.

Prue says users at Fanton will benefit from "double-authenticating" through the virtual smart card's password on their PCs and the one-time password and the one-time password they've memorized.

Secure Computing, which competes in authentication against RSA Security, IBM, Computer Associates and Netegrity, among others, notes that SafeWord PremierAccess can be used to establish a single sign-on capability within an organization.

This is done by installing SafeWord single-sign-on software agents onto any type of Web server and Windows or Unix machines where access to many resources is needed. Access control is handled by encrypted cookies on each server that broker authorized access at each server after the user has authenticated one time.

SafeWord PremierAccess has been tested to work with several types of VPNs, including those from Alcatel and Check Point.

A SafeWord policy management console lets managers keep track of users' authentication credentials and establishes role-based access based on job title, for example, for the purpose of granting specific resource access privileges, Leichter says.

SafeWord PremierAccess is based on per-user pricing according to authentication method and volumes purchased. For example, 100 users would run between $25 to $100 each, while 5,000 users would range from $7 to $24 per head.

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B1001

1. What is the principal business activity at your location? (check ONE only)

01. ☐ Manufacturing (Non-Computer/ Communications OEM)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/ Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities/Process Industries (Mining/Construction/ Petroleum Refining,/ Agriculture/Forestry)
10. ☐ Government/Military
11. ☐ Consulting (Independent) *
12. ☐ Education
13. ☐ Carriers/Voice/Data/ISP
14. ☐ Web Hosting/HSP
15. ☐ ASP/SSP/MSP
16. ☐ Manufacturing (Computer/ Communications/OEM)
17. ☐ Resellers/VARs/VADs/ Integrators/Distributors* (Computers/Communications)
18. ☐ Other (please specify)

_____

*Attn Consultants, Integrators, Distributors, Resellers: Please complete form based on ALL clients and your own business needs

2. P: What is your primary job function? (check ONE only) S: What additional job functions are you involved in? (check ALL that apply)

P	S		P	S		P	S	
☐	☐	1. Network Management	☐	☐	4. Datacom/Telecom Management	☐	☐	7. Corporate Management (CEO, COO, CFO, Pres., VP, Dir., Mgr.)
☐	☐	2. CIO/CTO/IS/IT/MIS/ Systems Management	☐	☐	5. Internet/Intranet/Web/ E-Commerce Management	☐	☐	8. Consultant (Independent)
☐	☐	3. LAN Management	☐	☐	6. Engineering Management	☐	☐	9. Other (please specify)

_____

3. What is the estimated value of network equipment and services that you specify, recommend, or approve the purchase of? (Please print the appropriate number code on the line next to each product category. Please complete ALL categories A–O.)

1. $100 Million or more
2. $50 Million to $99.9 Million
3. $25 Million to $49.9 Million
4. $10 Million to $24.9 Million
5. $1 Million to $9.9 Million
6. $100,000 to $999,999
7. $50,000 to $99,999
8. Under $50,000
9. None of the above

A ____ Large Systems *(Mainframes/Minis)*
B ____ Desktops *(Micros/Laptops/ Workstations)*
C ____ Mobile *(including PDAs, Wireless)*
D ____ Servers
E ____ LANs
F ____ WAN Equipment
G ____ Carrier Services
H ____ Internet/Web/E-commerce
I ____ Intranet/Extranet
J ____ Internetworking *(including Routers, Switches)*
K ____ Storage
L ____ Remote Access
M ____ Peripherals
N ____ Software
O ____ Service/Support Services

4. What is the total number of sites for which you have purchase influence? (check ONE only)

1. ☐ 100+ 2. ☐ 50 to 99 3. ☐ 20 to 49 4. ☐ 10 to 19 5. ☐ 2 to 9 6. ☐ 1 7. ☐ None

8. Please indicate the Web/Security/LAN/Internetworking/Wireless/Mobile/WAN Equipment/ Carrier Services that you are currently involved in purchasing or plan to purchase: (check ALL that apply) A. Currently involved in purchasing B. Plan to purchase

WEB

A	B		A	B		A	B	
☐	☐	01. Web Servers/Software	☐	☐	04. Web Development Tools	☐	☐	07. Web Acceleration/Caching/ Load Balancing
☐	☐	02. Web Traffic Management	☐	☐	05. Web Content Management	☐	☐	08. Web Hosting Services
☐	☐	03. Electronic Commerce Tools	☐	☐	06. Web Collaboration/ Groupware	☐	☐	09. Other

SECURITY

A	B		A	B		A	B	
☐	☐	10. Firewalls	☐	☐	13. DES Encryption Tools	☐	☐	16. Certificate Authorities
☐	☐	11. Anti-Virus Software	☐	☐	14. Authentication Tools	☐	☐	17. Biometrics
☐	☐	12. Private Key Encryption Tools	☐	☐	15. Intrusion Detection	☐	☐	18. Other

LANs/INTERNETWORKING

A	B		A	B		A	B	
☐	☐	19. Fast Ethernet	☐	☐	26. Storage Backup (Optical, Disk, Tape, RAID)	☐	☐	30. Hubs/Intelligent Hubs/ Stackable Hubs
☐	☐	20. Gigabit Ethernet	☐	☐	27. Network Test/Diagnostic Tools	☐	☐	31. Cables,Connectors, Baluns
☐	☐	21. Layer 3-7 Switches	☐	☐	28. Uninterruptable Power Supplies (UPS)	☐	☐	32. Wiring/Fiber Systems
☐	☐	22. ATM Switches	☐	☐	29. Network Interface Cards (NICs, PCMCIA)	☐	☐	33. Net Management Systems
☐	☐	23. Routers				☐	☐	34. Voice Over IP (VoIP) Tools
☐	☐	24. Network Attached Storage (NAS)				☐	☐	35. Network Analyzers
☐	☐	25. Storage Area Networks (SANs)				☐	☐	36. Other Local-Area Network/ Internetworking

WIRELESS/MOBILE

A	B		A	B		A	B	
☐	☐	37. Wireless LANS	☐	☐	39. Wireless LAN Extension Tools	☐	☐	41. PDAs
☐	☐	38. Wireless/Cell Phones	☐	☐	40. Mobile Data Equipment/Services	☐	☐	42. Other Remote/Wireless

WAN EQUIPMENT

A	B		A	B		A	B	
☐	☐	43. Frame Relay Equipment	☐	☐	48. Voice/Video over IP Gateways	☐	☐	53. DSUs/CSUs
☐	☐	44. Bandwidth Managers	☐	☐	49. Modems	☐	☐	54. PBXs
☐	☐	45. Bandwidth Shaping/QOS Tools	☐	☐	50. Cable Modems	☐	☐	55. Call Center Tools
☐	☐	46. VPN Equipment	☐	☐	51. xDSL Products	☐	☐	56. Videoconferencing Gear
☐	☐	47. ATM Switches	☐	☐	52. Diagnostic/Test Equipment	☐	☐	57. ISDN Equipment/Services
						☐	☐	58. Other WAN Equipment/Services

CARRIER SERVICES

A	B		A	B		A	B	
☐	☐	59. Internet Access	☐	☐	64. ATM Services	☐	☐	69. Wavelength Services
☐	☐	60. Private Lines	☐	☐	65. Managed Services	☐	☐	70. Dark Fiber
☐	☐	61. Frame Relay Services	☐	☐	66. VPN Services	☐	☐	71. Other Carrier Services
☐	☐	62. ADSL/DSL	☐	☐	67. LAN-Extension Services			
☐	☐	63. T-1/T-3 Services	☐	☐	68. OC-3/OC-12			

A B
None of the above (1 – 71) ☐ 72. ☐

9. Please indicate the Systems/Peripherals/Software/Applications/Business Services that you are currently involved in purchasing or plan to purchase: (check ALL that apply) A. Currently involved in purchasing B. Plan to purchase

SYSTEMS/PERIPHERALS

A	B		A	B		A	B	
☐	☐	01. Laptops/Notebooks	☐	☐	06. Fax Servers	☐	☐	10. Mainframes
☐	☐	02. Desktops	☐	☐	07. Remote Access Servers	☐	☐	11. Printers
☐	☐	03. Intel-Based Servers	☐	☐	08. Video Servers	☐	☐	12. Enclosures/Racks/Furniture
☐	☐	04. Risc-Based Servers	☐	☐	09. Mid-Range Systems (including workstations)	☐	☐	13. Other Computers/ Peripherals
☐	☐	05. Print Servers						

SOFTWARE/APPLICATIONS

A	B		A	B		A	B	
☐	☐	14. Desktop/Server Operating Systems	☐	☐	20. Database Management Systems	☐	☐	25. Middleware
☐	☐	15. Network Management	☐	☐	21. Customer Resource Management (CRM)	☐	☐	26. Document Management Tools
☐	☐	16. Systems Management	☐	☐	22. Enterprise Resource Planning (ERP)	☐	☐	27. Site Metering Tools
☐	☐	17. Directory Services	☐	☐	23. XML Tools	☐	☐	28. Software Distribution Tools
☐	☐	18. E-Mail	☐	☐	24. Desktop Videoconferencing	☐	☐	29. Data Warehousing
☐	☐	19. Groupware				☐	☐	30. Applications Development Tools
						☐	☐	31. Other Software/Applications

BUSINESS SERVICES

A	B		A	B		A	B	
☐	☐	32. Application Service Provider Services	☐	☐	33. Systems Integration/ Consulting	☐	☐	35. Other Services
			☐	☐	34. Education/Training Services			

A B
None of the above (1 – 35) ☐ 36. ☐

10. Please indicate the platforms that are currently installed/planned: (check ALL that apply) A. Currently installed B. Planned for purchase

NETWORK PROTOCOLS

A	B		A	B		A	B	
☐	☐	01. TCP/IP v4	☐	☐	03. SNA/APPC/APPN/LU6.2	☐	☐	05. NETBIOS/NETBUEI
☐	☐	02. TCP/IP v6	☐	☐	04. Novell IPX/SPX	☐	☐	06. NFS
						☐	☐	07. Other Network Protocols

LAN/WAN ENVIRONMENT

A	B		A	B		A	B	
☐	☐	08. Gigabit Ethernet	☐	☐	13. Token Ring/Token Ring Switching	☐	☐	18. DSL
☐	☐	09. Switched Ethernet	☐	☐	14. Layer 3-7 Switching	☐	☐	19. ISDN
☐	☐	10. Fast Ethernet	☐	☐	15. FDDI	☐	☐	20. Frame Relay
☐	☐	11. Ethernet	☐	☐	16. Fibre Channel	☐	☐	21. Private Line T1, T3, OC-3, OC-12
☐	☐	12. ATM	☐	☐	17. Wireless LANs	☐	☐	22. Other LAN/WAN Environment

DESKTOP/SERVER OPERATING SYSTEMS

A	B		A	B		A	B	
☐	☐	23. Windows 2000	☐	☐	28. Intel based UNIX	☐	☐	34. Palm OS
☐	☐	24. Windows 95/98	☐	☐	29. RISC based UNIX (incl. SOLARIS)	☐	☐	35. Windows CE
☐	☐	25. Windows NT/Windows 2000	☐	☐	30. IBM MVS/VM/VSE/ESA	☐	☐	36. Other Network Operating System
☐	☐	26. Novell (NetWare 5.X, 4.X, 3.X, 2.X)	☐	☐	31. OS/400			
☐	☐	27. LINUX	☐	☐	32. Digital VMS			
			☐	☐	33. Macintosh			

A B
None of the above (1– 36) ☐ 37. ☐

Continued on next page...

Continued from page one...

5. What is the total number of Servers/Clients installed/planned at your location/in your entire organization? (check ONE box in each column)

	SERVERS		CLIENTS	
	At Location (A)	Entire Org. (B)	At Location (C)	Entire Org. (D)
1.	50,000+		50,000+	
2.	10,000 to 49,999		10,000 to 49,999	
3.	1,000 to 9,999		1,000 to 9,999	
4.	100 to 999		100 to 999	
5.	50 to 99		50 to 99	
6.	10 to 49		10 to 49	
7.	1 to 9		1 to 9	
8.	none		none	

6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check ONE only)

CORPORATE/ENTERPRISE:
1. ☐ Entire Enterprise/ Multiple Enterprises
2. ☐ Multinational Enterprise
3. ☐ Division/Multiple Divisions
4. ☐ Department
5. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network/IT Strategy
2. ☐ Recommend/Specify Brand
3. ☐ Approve Purchase
4. ☐ Evaluate Products/Services
5. ☐ Determine the Need
6. ☐ None

7. What is the estimated number of employees in your entire organization/at your location? (check ONE in each section)

A. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 499 or less

B. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 – 19,999
3. ☐ 5,000 – 9,999
4. ☐ 2,500 – 4,999
5. ☐ 1,000 – 2,499
6. ☐ 500 – 999
7. ☐ 250 – 499
8. ☐ 100 – 249
9. ☐ 99 or less

11. Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Servers
1. ☐ IBM (Mainframes)
2. ☐ IBM RS/6000
3. ☐ IBM AS/400
4. ☐ Compaq/Digital/ Tandem
5. ☐ Unisys
6. ☐ H-P
7. ☐ Other

B - Workstations/Desktops/Laptops
1. ☐ Sun Microsystems
2. ☐ H-P
3. ☐ Compaq/Digital
4. ☐ IBM
5. ☐ Dell
6. ☐ Gateway
7. ☐ Fujitsu
8. ☐ Other

12. What is the estimated gross revenue of your entire company/institution? (check ONE only)
1. ☐ $20 Billion or More
2. ☐ $10 Billion to $19.9 Billion
3. ☐ $1 Billion to $9.9 Billion
4. ☐ $500 Million to $999.9 Million
5. ☐ $100 Million to $499.9 Million
6. ☐ $50 Million to $99.9 Million
7. ☐ $10 Million to $49.9 Million
8. ☐ $5 Million to $9.9 Million
9. ☐ $4.9 Million or Less
10. ☐ None of the above

13. For which areas outside of the U.S.A. do you have purchase influence? (check ALL that apply)
1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ Africa
7. ☐ Canada
8. ☐ None

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Peribit takes a bite out of WAN traffic

■ BY JOHN DIX

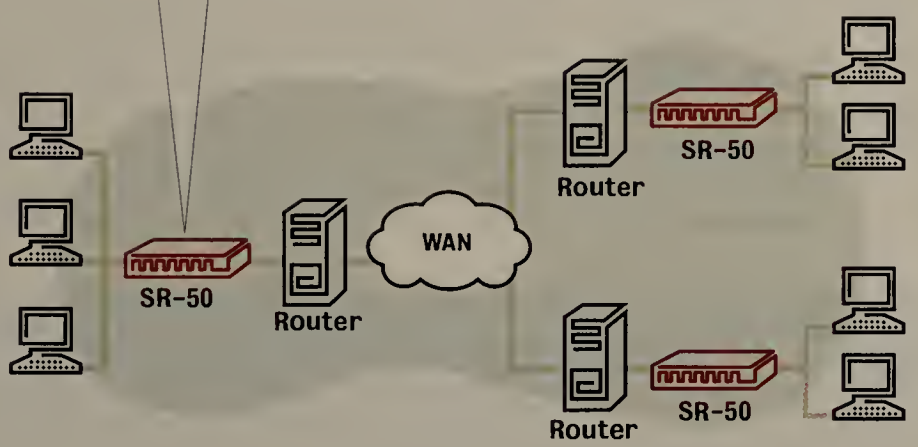
More for less | **Newcomer Peribit says pattern recognition techniques developed for DNA research let it reduce data transmitted over WAN links by 70%.**

Borrowing from pattern recognition technology developed in DNA sequence research, start-up Peribit says its new compression technique can reduce traffic across WAN links by up to 90% by swapping labels for redundant blocks of IP data.

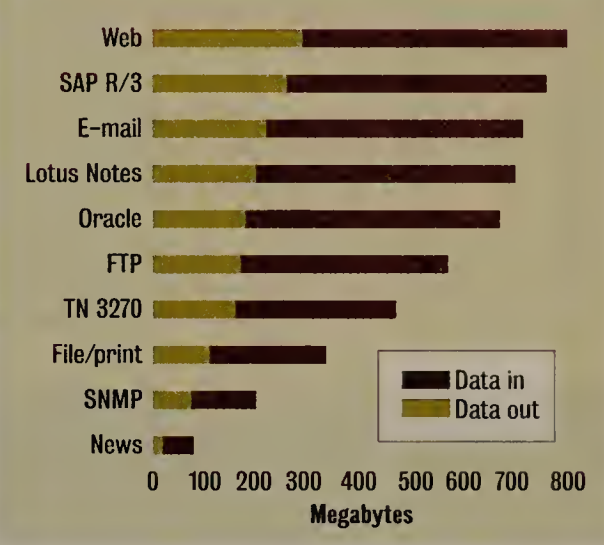
The company's SR-50 compression appliance, which was launched recently at NetWorld+Interop 2001 in Atlanta, has two 10/100 Ethernet ports and is installed on a LAN behind a router. Once activated, the transparent, wirespeed device scans for other SR-50s and then begins identifying redundant blocks of data that can be stripped out of the WAN path.

Pattern recognition is done using Peribit's patent-pending Molecular Sequence Reduction technology. Essentially, the box goes "through a learning process and builds a table of repeated patterns that is continuously and dynamically updated as new patterns are learned and old patterns that don't recur frequently are forgotten," the company says. "The amount of historical data stored can vary from tens to hundreds of megabytes, or more."

The SR-50 looks for large blocks of repetitive data — such as application components — that can be replaced with labels. Real data is swapped in by remote SR-50s. The company says the product can increase WAN link capacity by four to 10 times.



Data reduction by application using the SR-50



Once identified, the repetitive blocks of data are replaced by labels, and the real data is swapped back in by remote SR-50s, says Amit Singh, Peribit co-founder and chief scientist. Delay is said to be limited

See Peribit, page 18

Short Takes

■ Remote **Apple** Macintosh users can now connect with **Nortel** VPN gear over dial-up Internet connections. Nortel has added a software client for Mac operating systems to its Contivity VPN equipment, which previously supported only **Microsoft** operating systems. Nortel says it will have a VPN client for Unix by year-end and has set out longer-term goals of developing clients for Linux, Solaris, IBM-AIX and HP-UX. These software clients require no upgrades to the Contivity VPN gear to which the clients connect. The telecom equipment giant also says that next month it will upgrade the software on its Contivity equipment to support the VPN client that Certicom makes for handheld devices. Called movianVPN, the software uses an encryption method that requires less processing power than the method typically used with VPN clients for more powerful PCs. www.nortel.com

3Com keeps Gigabit Ethernet train rolling

■ BY PHIL HOCHMUTH

SANTA CLARA — 3Com will introduce several Gigabit products this week to help small to midsize companies bolster the speed of their networks while reducing network deployment and management headaches.

3Com has been one of the technology companies hit hardest by the recent downturn in the network hardware market. A recent reports states that the company's net losses increased 300% in its first fiscal quarter, compared with the same quarter a year ago. Still, the company is finding some positive news in terms of market share in the markets for copper Gigabit Ethernet switches. According to Cahners In-Stat, 3Com was the top seller of copper Gigabit Ethernet switch ports in the first quarter, with 35.7% of the market.

And the firm is looking to extend that success by introducing its 24-port SuperStack 3 Switch 4924, which has twice the 1000Base-T copper Gigabit ports as the previous 4900 box. The Switch 4950 will also be rolled out, which offers 12 fixed 1000Base-T ports and 12 fixed 1000Base-SX ports for Gigabit Ethernet over single-mode fiber-optic wiring. The box also supports six gigabit interface converter (GBIC) slots which could be filled with additional 1000M-bit/sec single-mode connections. Such connections, which can reach up to three miles, could be used to connect a 4950 to switches and servers located in other buildings on campus or in a metropolitan-area network.

Also on tap this week from 3Com is the addition of Layer 3 switching software to its 4900 series switches. New 4900 switches will ship with the software — which includes Web-based Layer 3 network management and setup tools — while previous 4900 products can be upgraded for free. Layer 3 software will make routing possible between 4900 switches located across long distances in a WAN or campus network.

Several 4924 switches are slated for the network at Crawfordsville (Ind.) Community Schools. The school system will use the box's 24 Gigabit Ethernet connections to plug in 21 Citrix-based Windows terminal servers over its existing Category 5 cabling.

"This will let us put our Citrix servers in same building so we don't have to drive across town if servers need to be fixed or upgraded," says Gene Howell, IT manager for the school district. The servers are currently located in various buildings throughout the school system.

In the new centralized data center, 4924s will use two trunked Gigabit connections to link to a modular 3Com Switch 4005, which acts as the schools' backbone.

The Crawfordsville school system is in the process of eliminating its 56K bit/sec ISDN WAN connections, which link the eight elementary and secondary schools together. The school system will soon have its own dark fiber installed among its buildings through an arrangement with the local electric utility company. Switch 4924s and 4900s will aggregate traffic in the schools and uplink to the backbone via Layer 3, 1000Base-LX GBIC connections.

To help set up this Gigabit Ethernet WAN, Howell is also testing 3Com's Layer 3 software for the 4900s to route traffic over the long-distance fiber links. Howell says the Web-based management and setup software 3Com offers for Layer 3 configu-

See 3Com, page 18

Peribit

continued from page 17

to a millisecond.

Why might Peribit succeed while other other compression and trunk expansion techniques have met with only tepid demand? Singh says the promise of tripling WAN bandwidth will help customers overcome the resistance to introduce another box in the network. "Older technologies didn't promise as much payback," Singh says.

The SR-50 can squeeze traffic so much because of the repetitive information in headers, attachments and applications that must be synchronized, such as databases and e-mail, Singh says. As an example, the company says the SR-50 can typically reduce e-mail traffic by 75%, SQL by 80% and Lotus Notes by 78% (see graphic, page 17).

However, it won't work on encrypted links, so trunks supporting secured links won't see much in the way of benefit. Asked if the box might interfere with quality of service, voice over IP or other emerging technologies, Singh says it can be programmed to ignore any type of traffic.

In fact, in the event of a power, hardware or software failure, it takes itself out of the loop and lets all traffic through.

To see how boxes are performing, customers can use a browser to get real-time feedback or a historical glance at performance, in terms of total reduction in WAN traffic or by application.

That reporting feature amounts to a self-selling feature. Customers can bring in one device, set it up in profile mode to watch traffic on a link, and then have it generate reports about how much it could have compressed.

Depending on the line's expense, the typical return on investment time frame is three to six months, Singh says.

An ancillary benefit: Reducing outbound traffic takes some burden off routers and could let you put off router upgrades. Singh says he has seen router CPU utilization drop from 70% to 30% in some instances.

The SR-50 is shipping now and costs $20,000 for a box that supports WAN speeds up to E-1, the 2M-bit/sec European equivalent of T-1. The box scales up to 50M bit/sec for T-3 links, a configuration that costs about $100,000.

Peribit: www.peribit.com

More online!

Read more about Peribit's Molecular Sequence Reduction technology.

DocFinder: 6233

3Com

continued from page 17

ration is nice, but he prefers to use the command-line interface for certain configurations.

In addition to the new switches and software, 3Com is releasing a dual-port 1000Base-T module for its chassis-based Switch 4005 and single-port copper GBICs for the Switch 4007, 3Com's higher-density chassis for midsize networks. The 1000Base-T module could be used for hooking a server aggregation switch, such as the 4900 or 4924, with a Switch 4005 in the backbone, while the copper GBIC could be used for the same function with the Switch 4007.

Few competitors match 3Com's price per port or copper Gigabit Ethernet port density in a stackable product. Similar products include the Cisco 3550-12T, a 10-port Copper Gigabit switch with two GBIC uplinks, which sells for about $813 per Gigabit port. Foundry Networks' recently announced line of FastIron II switches offer 16-, 24- and 32-port 1000Base-T models. However, these boxes are pricier than the 3Com offerings, with 3Com's 24-port box priced at $416 per port, vs. the 24-port FastIron II, which costs about $660 per Gigabit port.

3Com's SuperStack 3 Switch 4924 is priced at $10,000 and is available this month. Also available this month is the free Layer 3 software upgrade for the 4900 series and the dual-port 1000Base-T module for the 4005, costing $2,000.

In November, the SuperStack 3 Switch 4950 will be available for $14,000, and the copper GBIC inserts for the Switch 4007 will be available for $400. Both the server and desktop NICs are available now for $170 and $150, respectively.

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TOLLY ON TECHNOLOGY
Kevin Tolly

Are we looking at the sunset for 'solution'?

I admit, I'm a technology-centric guy. Talk of "solutions" has always made me uneasy. The fundamental premise that a vendor can create a "superior solution" out of demonstrably inferior component products is suspect. But there are signs pointing, perhaps, to the sunset of all this solutions talk and putting the focus back on technology.

The unlikely source of this ray of hope is the of-late beleaguered Cisco. As part of its "sweeping reorganization" of late August, Cisco eliminated its solutions-centric line-of-business approach. The enterprise, service provider and commercial businesses are no more. Instead this technology company has decided to organize itself around ... technology.

Given the role that Cisco plays in the networked world, this shift could have a ripple effect throughout the industry. (See www.nwfusion.com, DocFinder: 6225.)

The solutions approach was the mid-'90s marketing coup that let larger vendors with a mixed bag of often so-so technology prevail over the scrappy start-ups that focused on excellence in one area. And it played well when those struggling start-ups were then acquired and integrated into the ever-growing solutions companies.

Even though this solutions strategy was flawed, too few customers challenged Cisco on it. Consequently, the strategy evolved into a religion with converts industrywide.

Solutions vendors would make declarations along the lines of: "Just having the best components doesn't mean you'll build the best solution." I can't argue with that. But the vendors would have you believe that a convoluted converse of that would be true also — that somehow having lackluster products in the portfolio mix would somehow result, ultimately, in a superior solution.

At Cisco, the solutions approach adopted by the individual lines of business, caused a fundamental problem. According to Cisco executives, it had people working at cross-purposes — reinventing the same or an oh-so-slightly different wheel at different parts of Cisco.

IBM did the same thing in the '70s but it had little choice, faced with a decade-long antitrust action that could have resulted in an IBM breakup.

"We can only hope that Cisco's back-to-basics focus on technology will be the harbinger of an industry trend."

We can only hope that Cisco's back-to-basics focus on technology will be the harbinger of an industry trend. Technology, after all, is what the technology business is supposed to be about.

Perhaps its experience competing with Juniper Networks had finally shown Cisco that time had run out on the we-are-the-world approach. According to industry reports, this essentially single-product purveyor of high-end multigigabit switches had in recent times taken 30% of the high-end router market — all at Cisco's expense.

I had to chuckle when I read the almost off-handed way the reorganization came about. Cisco exec James Richardson stated, "There's nothing to be read into [the reorganization]." It was just that one key exec, it seems, had decided to leave. This triggered Chambers to look at his exec team, and, according to Richardson, Chambers said, "Well, if I'm going to change to a functional organization, I might as well do it now."

Does that mean that Cisco was a dysfunctional organization before? It's like President Bush saying: "Well, the Army's chief of staff retired, so hell, I thought I'd just eliminate that whole 'service' thing and just put 'em all together."

What is important is the change. I, for one, am looking forward to seeing the industry focus once more on core technology.

Tolly is chairman and CEO of The Tolly Group. He may be reached at ktolly@tolly.com.

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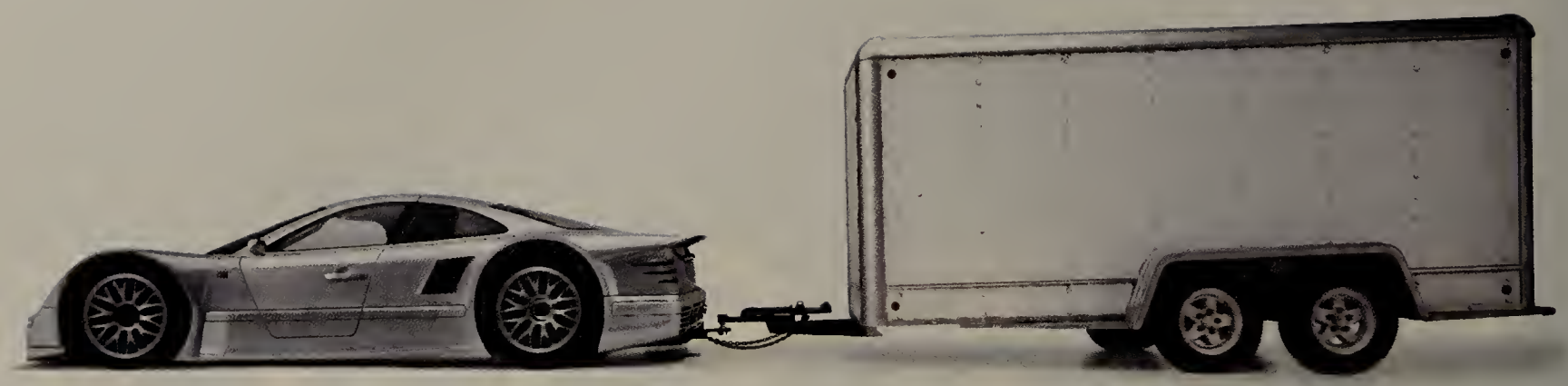

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Enterprise Applications

■ INTRANETS ■ MESSAGING/GROUPWARE
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In Site: Lessons from Leading Users

Shipping co. cuts application development costs

■ BY JOHN FONTANA

Michel Langlois is writing another chapter in his company's legacy of 150 years of innovation, and he is using network security and access management to do the job.

The director of enterprise architecture for APL, one of the world's oldest ocean shipping companies, is constructing an access control system that puts a secure gate on his network, controlling access by developers, end users and partners.

For his IT peers, it may be a lesson in proving that Web-based access control can provide single sign-on and object-level security for an entire intranet of applications and slash application development costs.

"It's about security and control, but also it's the idea that each developer does not have to create their own authentication mechanism. The key here is reuse," Langlois says. "This authentication service will make the building of applications simpler, quicker, faster and cheaper."

The authentication control is but one of nearly 30 reusable platform services that are part of APL's ambitious project to construct a new enterprise application platform — called Enterprise Environment — around Sun Solaris servers, Java and Java 2 Platform Enterprise Edition. APL then plans to convert its 20 current mainframe applications, some of which have been in service for 20 years, to run on the platform.

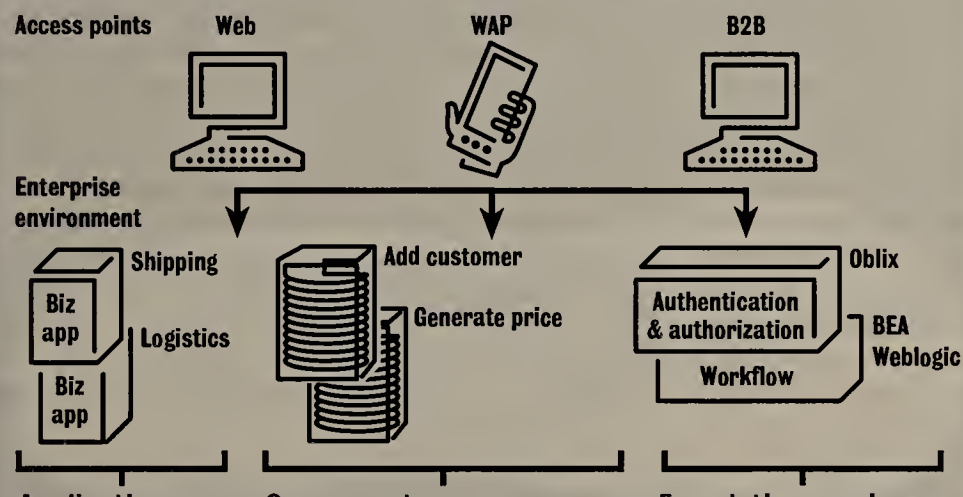
The result will be a fault-tolerant environment and set of application services that can be extended throughout APL and its shipping customers. APL hopes the system will help it return price quotes in near real time, a process that takes up to a day or even a week in some cases.

APL, which operates 120 ships that haul cargo worldwide, has spent $8 million on hardware and software to build the Enterprise Environment. But it plans to save some $15 million to $20 million per year on costs for application development, and quality and assurance testing after the system

See APL, page 24

Building better applications

APL, one of the nation's oldest ocean shipping companies, is constructing a new enterprise application environment that promises to decrease administrative costs and application development time.



Applications
APL's applications can incorporate a compilation of standard services and components.

Components
APL calls these "use cases." The prebuilt Enterprise Java Beans are miniprograms, such as a price checker, that can be reused in any application, cutting application development time.

Foundation services
A set of up to 30 services that any application can use, creating a similarity across applications, eliminating security holes or integration issues.

Short Takes

■ **Tavve Software** last week named **Robert Davis** as its president and CEO. Davis comes to Tavve, a network management software maker in Research Triangle Park, N.C., with 20 years industry experience. Davis worked at IBM subsidiary Tivoli Systems as vice president of the service provider business unit. He also held positions at Lucent as vice president of enterprise sales and director of engineering. Tavve has been without a full-time CEO since late March. www.tavve.com

■ **Velosel** recently rolled out **eChannel Manager 4.0**, an upgrade of its software that lets suppliers manage their electronic sales channels, from exporting catalog content to processing orders. EChannel Manager now features tools to generate reports, perform analysis and send notification for such actions as delays in fulfillment or decreasing order volume. Other functions include automating the sell-side order process, from placement to fulfillment; analytic tools to understanding buying behavior, history and patterns; and the ability to publish custom catalogs specific to each buyer. Cost for hosting services ranges from $10,000 to $50,000 per monthly subscription; licensing fees start at $350,000. www.velosel.com

Aprisma expands Spectrum

Network mgmt. software will come in three targeted versions.

■ BY DENISE DUBIE

DURHAM, N.H. — In November, Aprisma will break its flagship Spectrum network management package into three targeted releases and add features that will help customers track and find the cause of network problems more quickly.

Although the company would not disclose specific product details, beta version users say the package will feature improved event correlation and root-cause analysis capabilities, as well as the ability to share data with third-party applications using Spectrum's central database and management console. Spectrum is network management software that monitors the availability and performance of networks, applications and systems, and helps users detect potential outages or network downtime.

Aprisma says the next release of Spectrum will come in three flavors — Spectrum for emerging enterprise, Spectrum for global 2000, and Spectrum service provider — for small firms, large enterprise companies, and service providers, respectively.

The company says it developed the separate versions to address the specific needs of different users. For example, small to midsize users will not have to purchase or implement the entire Spectrum framework, which can be costly with prices ranging from $25,000 to $150,000, depending on the size of the network. The company would only say that the service provider version is

See Aprisma, page 24

'NET INSIDER
Scott Bradner

Tensions in a privacy purist

Regular readers of this column will know that I have been worried about the ease with which governments can erode expectations and realities of individuals' privacy on the Internet. I have written about these threats for many years. Suddenly it's not so easy to be a privacy purist, but that doesn't make it any less important.

It is widely said that the first casualty of war is the truth, but the individual is not far behind. I don't see any specific evidence of the erosion of truth, but proposals by the Bush administration and by well-meaning representatives and senators are, at their base, attempts to subvert individual rights in the name of fighting terrorism. The people who propose these attacks seem to think individual rights are inconvenient in times of national threat — and they're right.

It would be one thing if all of the proposals would make thwarting and catching terrorists easier, but all too many of them are repackaged ideas that have been rejected by Congress over many years and are entirely orthogonal to the terrorist threat. Some are clearly logical and should be adopted, such as the idea that it is an individual that is being wiretapped and not just a piece of hardware.

Proposals to require "back doors" in encryption programs is an example of something less logical. The use of back-door-free encryption cannot actually be prevented, no matter how much someone might want to do so. The algorithms are too well-known, and there is too much existing software. Monitoring communications links to try to catch people would not be effective because anyone serious could encrypt already encrypted data, using an approved system for the last encryption. The authorities wouldn't know that this was happening until they got a warrant to wiretap the communications, and then the only thing they could do is charge the individuals with illegal use of encryption, like charging Al Capone with tax evasion.

I'm not alone in my worries about going too far. Groups ranging from the National Rifle Association to the American Civil Liberties Union have expressed concerns. We just need to remember that those inconvenient rights are what makes this country different from many others. To destroy them to save the country would be a hollow victory.

Disclaimer: Even within Harvard opinion is split on this topic; the above is my take.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

Aprisma

continued from page 23

more scalable to manage larger environments.

Aprisma follows competitors Computer Associates with Unicenter and Hewlett-Packard with OpenView, which this summer separately announced modular versions of their management software.

Giga Information Group analyst Jean-Pierre Garbani says the large network management vendors are now breaking their "framework" software down into smaller pieces that can be more easily integrated into a user's heterogeneous environment.

"Enterprise users will be able to enjoy a less monolithic type of implementation.," Garbani says. "And the big framework vendors will have to provide products better than the point products that are cheaper to buy and easier to deploy. Enterprise users can take advantage of that."

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While details from Aprisma were not forthcoming, enterprise users who will be beta-testing the package told of some key enhancements to the release. Some new features will include upgraded event correlation, which Kimberly Kloskey, senior WAN data network engineer at Aurora Health Care in Milwaukee, says will help her quickly determine the root cause of problems in the network.

For example, she says Spectrum will help her identify when seemingly unrelated events lead to a network brownout. She can then configure the software to take corrective action when those events happen again.

"When we can pinpoint those events, we'll know before the help desk when the network isn't performing well, and we can tell them to prepare for it," Kloskey says.

"In a lot of cases, we can get it repaired before people even know it's not working," she says.

Katherine Stroud, network administrator at Bloomington Hospital in Bloomington, Ind., says she is most anticipating being able to share data between Spectrum and other third-party applications when she upgrades in November from Spectrum 6.01 to the large enterprise release.

"Right now, we have several consoles for our help desk, performance and network reports. With the next release, I'll be able to set up a central database that shares the information and one console to gain access," Stroud says.

She's also looking forward to enhancements in the software's auto-discovery features that will automatically locate and identify network devices and deliver an updated topology map.

On the road to IPO

In other news, Aprisma last month took the first step in becoming a publicly traded company when it completed its Form 10 filing with the Securities and Exchange Commission. Aprisma was the infrastructure management software business of Cabletron before it split into four separate companies last year.

In August, Cabletron shut down its business and spun off Enterasys, a maker of enterprise hardware, and Riverstone Networks, which makes service provider hardware. Aprisma became a subsidiary of Enterasys.

Aprisma has applied for its shares of common stock to be traded on the Nasdaq under the symbol APRM.

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Site: Lessons from Leading Users

APL,

continued from page 23

swings into full operation for its 7,500 internal users.

Key will be access control, something that today is merely user identification and passwords for the mainframe applications.

Phase 1 of the project has established single sign-on capabilities for users of the company's intranet portal service.

But Phase 2 is where the innovation really begins.

Using NetPoint Web-access control software from Oblix, Langlois is creating an environment for secure access for users and developers to all the application objects, called "use cases."

Use cases, which are stored in an iPlanet Directory Server, are miniprograms that provide such functions as adding a customer or generating a price.

Administrators will use Oblix to add users to the authentication system, such as customer service representatives and field support people. Oblix will manage access control to applications and individual use case objects.

On the developer side, the software controls which developers can add new use cases and set controls, such as who can update a use case.

"We are going to essentially secure access to use cases and supply administrators with controls for securing those use cases," Langlois says.

Oblix will be used to centralize the information on who can see what, when, where and how. "We are using Oblix to maintain the security information for the access controls, the roles, the permissions, the assignment of permissions. Oblix is going to serve that management function."

"This authentication service will make the building of applications simpler, quicker, faster and cheaper."

Michel Langlois
Director of enterprise architecture, APL

The next step will be to deploy the delegated administration so partners can add users to their accounts.

"Down the road, hopefully in the next nine months, we will be able to go to our partners and say, 'You can get on our intranet site and you can set up your own users,'" Langlois says. Currently that is a very manual process. The partner has to call an APL administrator, who then sets up the account.

"In this new world, they can have an account, they can create accounts within that for their own users who can then submit bookings over the Web that are processed automatically. None of that was possible before," he says.

With all of the objects and reuse built into the system, Langlois hopes to eventually add a Web services flavor with the addition of standard protocols such the Simple Object Access Protocol.

"This business is an old business, and a lot of it is done over the phone. We hope to automate a lot of that," Langlois says.

And if he does, he will help extend the innovation story that APL has been writing since 1848 when company founder William Henry Aspinwall was called "harebrained" for contracting to deliver mail by steamship from Panama to San Francisco. ■

Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGES AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS

VeriSign, Illuminet take on IP telephony

Merger driven primarily by new technology called Enum.

■ BY CAROLYN DUFFY MARSAN

MOUNTAIN VIEW, CALIF. — The combination of dot-com powerhouse VeriSign and telephony services provider Illuminet that was announced last Monday is driven largely by the companies' desire to dominate an emerging technology called Enum that bridges the Internet and the public switched telephone network.

Developed by the Internet Engineering Task Force, Enum is a communications protocol that lets an end user type a phone number into a Web browser and access a URL of Internet resources for that number, such as an IP telephony, e-mail or Web address.

As support for the protocol becomes available in PBXs and telephones, Enum is expected to provide a much-needed service for initiating phone calls over the Internet. Enum also offers the promise of providing one point of contact for many communications devices, such as phones, PCs and fax machines.

VeriSign, which operates the Internet's .com, .net and .org domains, has been running an Enum test bed for about a year. VeriSign plans to offer registration services to its 3,300 corporate customers for Enum numbers and directory services for Enum numbers that match domain names and IP addresses.

By purchasing Illuminet for an estimated $1.2 billion in stock, VeriSign gains access to Illuminet's 900-plus local, long-distance and wireless carrier customers. That should speed up VeriSign's ability to offer integrated voice and data services — such as secure short messaging, local number portability and voice-over-IP bridging — over the Internet, company officials say.

VeriSign's mission is "to provide trusted services for every transaction and every communication over the Internet," says Bob Korzeniewski, an executive vice president of corporate development at VeriSign. "With the addition of Illuminet, we can provide these services in the voice infrastructure. . . . They are the VeriSign of the voice network."

The VeriSign/Illuminet combination plans to offer authenticated voice and data services to corporate and service provider customers. These services will let wireless phones link specific numbers to Internet domain names and enable callers to reach a company's Web site by speaking its name into a phone.

With Illuminet, VeriSign "will have the ability to offer these services more quickly to the enterprise," Korzeniewski says. "We're initially rolling out through the carriers." Enterprise-class services will be available by next year, he adds.

"This is a very good fit," says David Fraley, principal analyst with Gartner. "One of the big businesses that Illuminet does is local number portability. One of the big things that VeriSign wants is to get into Enum, which is essentially the Internet equivalent of local number portability. . . .Enum is still the key to unlocking voice over IP."

The VeriSign/Illuminet deal appears targeted at NeuStar, the North American telephone numbering authority that provides clearinghouse functions similar to those offered by Illuminet. ■

Short Takes

■ **British Telecom** last week said it expects to reach a decision about the breakup of telecommunication carrier **Concert Communications**, its joint venture with AT&T, by year-end. Company officials said existing customers would receive uninterrupted service and that BT would like to retain the customers it had when the joint venture was launched in 2000. Concert has lost hundreds of millions of dollars, according to AT&T and BT reports. The venture has 5,900 employees and annual revenue of $7 billion. Concert has struggled amidst a weak wireless market and fierce international price competition, BT said.

■ **Verio**, a wholly owned subsidiary of NTT Communications, is reducing its workforce by 25%. More than 3,000 employees at the ISP and Web hoster are expected to lose their jobs. Verio plans to consolidate offices and data centers around the U.S., although it would not say which locations will be closed or consolidated.

New Interland hosting lets users decide

■ BY JENNIFER MEARS

ATLANTA — Interland last week expanded its Web hosting line for small and midsize businesses with its first services since being reinvented in August after Micron Electronics acquired it.

The "new" Interland — a combination of the formerly independent company and Micron's HostPro Web hosting business — has unveiled one service for users demanding more technical control of their hosted servers and another for companies that want to off-load hosting responsibilities and focus on core business concerns. The services marry HostPro's experience serving Web developers and other technically demanding customers with Interland's expertise in managed hosting.

One of the new services, Power Dedicated Hosting, gives customers administrative control over their hosted servers from any Web-enabled device. The service is enabled by a CPU card, developed by Interland with Hewlett-Packard, that is independently powered and fitted into a hosted server so customers can monitor the server remotely, configure it to send alerts when hardware problems arise, and reboot cold servers through a browser from any computer with Internet access.

Who's in control?

Interland's new services let customers choose between taking a hands-on and hands-off approach to server hosting.

Service	Description	Price
Power Dedicated Hosting	Customers who want more control can remotely reboot their servers, access the internal server functions and receive e-mail alerts about hardware concerns.	Starts at $350 per month
Accelerator Dedicated Hosting	Customers can move from shared to dedicated Web hosting and keep the same user interface, as well as shared database and media servers.	Starts at $550 per month

"In the past, if a customer's server went down, if there was a software problem, for example, they would have to call us to restart their server," says Mark Alexander, an Interland vice president.

The other new offering, Accelerator Dedicated Hosting, is designed to make it easier for companies to move from a shared server to a dedicated server environment. In fact, the customer's user interface doesn't change even after the move.

Typically, companies buy into a shared hosting environment, in which several sites share one server, when their sites are small and cost-savings outweigh performance in importance. But companies may opt for a dedicated server as their sites grow.

Breaking the service offerings into categories based on technical control will help Interland stay competitive as others, such as telecommunications companies, look to attract small and midsize hosting customers, says Helen Chan, an analyst with The Yankee Group.

"They are ... really making a distinction between those that have technical sophistication and those that don't," she says. "Built into the product sets is an underlying theme of flexibility."

Interland has 33,000 square feet of data center space in hosting centers in Atlanta; Boise, Idaho; and Los Angeles. ■

EYE ON THE CARRIERS

Lisa Pierce

Network planning in the real world

People often refer to network planners as being divorced from others who work "in the real world," and figure they work in ivory towers. Two recent incidents make me think such separatists must reside in dark, musty basements. Or that's at least what they deserve.

In the first instance, a highly distributed company decided to reevaluate and switch its audioconferencing providers. Many companies complain about the high price of audioconferencing services, so it wasn't a surprise that this particular organization was shopping for a better deal.

But two aspects stopped me cold:

- It turned out that neither the company's telecom nor IT groups created the requests for proposal, conducted the evaluation, chose the provider, or signed the contract. Rather, it was finance that did the deal. Not surprisingly, it knew nothing about relative provider quality and never even considered the possibility of special user requirements. And yes, there was a big one.
- The organization in question holds lengthy, weekly conference calls between 50 and 80 revenue-producing, knowledge workers who call in from a variety of sites. Many are calling in from cell phones, hotel rooms phones or home phones.

These types of phones typically don't have "mute" buttons — something essential to allow for an orderly meeting in which anyone can contribute on an as-needed basis. And the particular provider selected doesn't support keystroke combinations to mute and unmute phones. Talk about a bad fit.

Readers may say, "Well that's what you get for involving business administrators in technical work." But sometimes IT doesn't fare any better.

For instance, a fast-growing company began the process of issuing a global telecom RFP. The IT department hired a consultant to perform the upfront work, including creation of a working draft.

One of the important issues in creating such a document is knowing what the existing network requirements are, and understanding how they will change over the planning horizon — typically two or three years. The input of several diverse but critical groups of users was essential to understanding the adequacy of the current WAN infrastructure and requirements for the future.

Although the company agreed the consultant would perform this work, it failed to make the necessary arrangements.

Essentially, the draft RFP was created in a vacuum. As a result, it is highly unlikely the WAN topology and features chosen will serve the company well over the next two to three years. That means the company will be forced to scramble, doubtlessly paying more for WAN services than it should. For the network executive, this scenario could be very career-limiting.

My advice: When undergoing the service and provider evaluation process, planning is critical. It should always be conducted by competent technical professionals, under the network executive's watchful eye. But it also absolutely must take into consideration and integrate the current and future requirements of users. Anything less is simply poor stewardship.

Pierce is a research fellow at Giga Information Group. She can be reached at lpierce@gigaweb.com.

VPN service aims to straighten your apps priorities

Ardent uses MPLS and RSVP to direct traffic better, guarantee bandwidth.

■ BY MICHAEL MARTIN

ARLINGTON, VA.— Ardent Communications this week is expected to launch a VPN service that will let enterprise customers prioritize their IP WAN traffic over secure connections on the carrier's nationwide backbone.

The service relies on Multi-protocol Label Switching (MPLS), which enables the assigning of a label to each packet at an edge router so that traffic can be transmitted directly to its destination point. Ardent's MPLS-VPN requires that customers use a high-speed connection, with a fractional T-1 line being the minimum.

With an optional Resource Reservation Protocol (RSVP) feature, customers can get guaranteed bandwidth over the Ardent network for their VPN traffic.

"RSVP builds a bandwidth commitment within the network," says Michael Abbott, Ardent's CTO. "That bandwidth is always reserved for whoever it belongs to."

Ardent, formerly known as CAIS Internet, has been in business since 1993, offering a range of high-speed data and Web services.

Abbot expects most customers will want to set up bandwidth commitments through RSVP and use that bandwidth to run VPN tunnels, with MPLS operating within the tunnel. This way, users get guaranteed bandwidth and application quality-of-service features within that guaranteed bandwidth tunnel.

MPLS-VPN, which can support up to 100 simultaneous tunnels over a T-1 or higher-speed connection, can run out to a customer premises or to an Ardent point of presence that is closest to the customer. To run MPLS to the customer premises will require a suitable router, such as a Cisco 3640, at the customer site. If customers don't have such a device, Ardent will work with them to set up an encrypted service between their sites and Ardent POP.

VA Medical in Washington, D.C, a Veterans Affairs medical center, has been using Ardent's MPLS-VPN service for about six months.

Six of the center's radiologists run the VPN over their DSL lines, so they can access X-rays without having to come into the center.

"We wanted to set it up so they wouldn't have to come in in the middle of the night for one X-ray," says Tony Perez, a network engineer with the center.

Before MPLS-VPN was installed, the radiologists were using ISDN to access the images. Perez says the technology was too slow, but the center couldn't move to DSL until it was sure the DSL connections were secure.

Ardent's VPN service met the center's security requirements, he says.

Ardent notes that it does not offer its MPLS-VPN service over DSL on a regular basis, but will accommodate major customers if they request it.

Ardent is also introducing a complementary service, called E-VPN, that can securely connect branch offices that rely on DSL to Ardent's backbone. DSL sites connect to other sites within the VPN network through IP Security and Triple Data Encryption Standard technology, rather than via MPLS. While this ensures security, it doesn't let the remote sites prioritize traffic. E-VPN supports up to 15 simultaneous VPN tunnels.

Customers signing up for any of Ardent's new offerings will have to commit to at least a one-year contract.

One target market for the MPLS-VPN service is companies that may consider a move away from frame relay.

A big advantage of an IP VPN over a frame relay network is ease of management, Abbott says. For example, if a customer wanted to add a new site to an existing frame network, the customer would have to modify the frame connections of all the other sites on the network. With an IP VPN, the customer only needs to reconfigure settings at the new site, he says.

Initial pricing on MPLS-VPN starts at $200 per site per month. E-VPN starts at $150 per site per month. Customers purchasing the RSVP option will be charged per megabit for their bandwidth commitment.

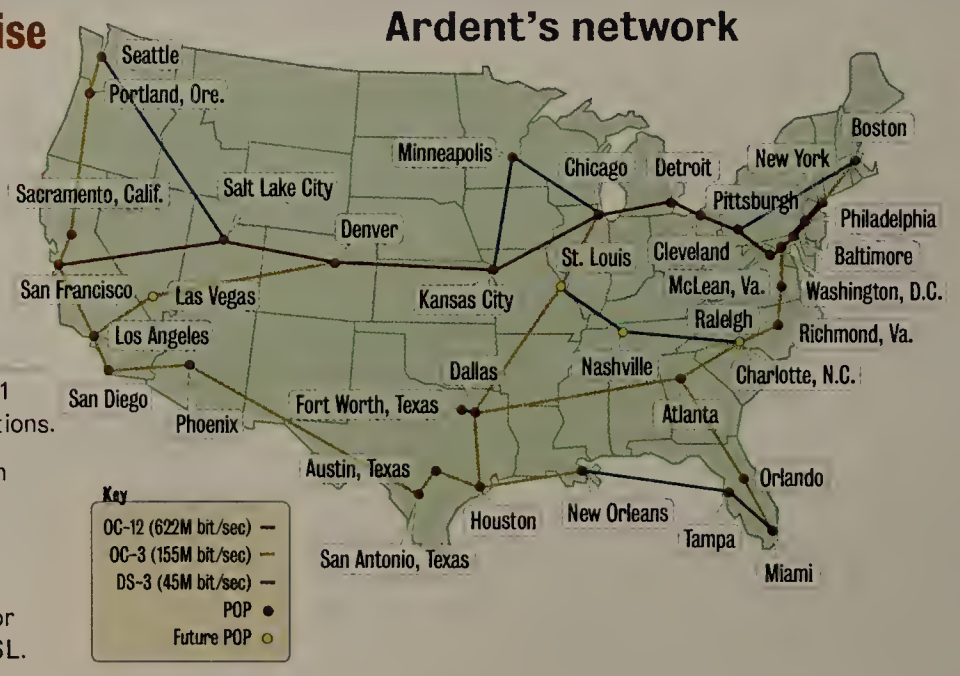
Ardent: www.ardentcomm.com

Securing enterprise communication

Ardent's MPLS-VPN service will allow secure connections between two or more corporate sites over the carrier's network. Features include:

- Support for fractional T-1 and higher-speed connections.
- A Resource Reservation Protocol option, giving customers dedicated bandwidth tunnels.
- An IP Security option for remote offices using DSL.

Ardent's network



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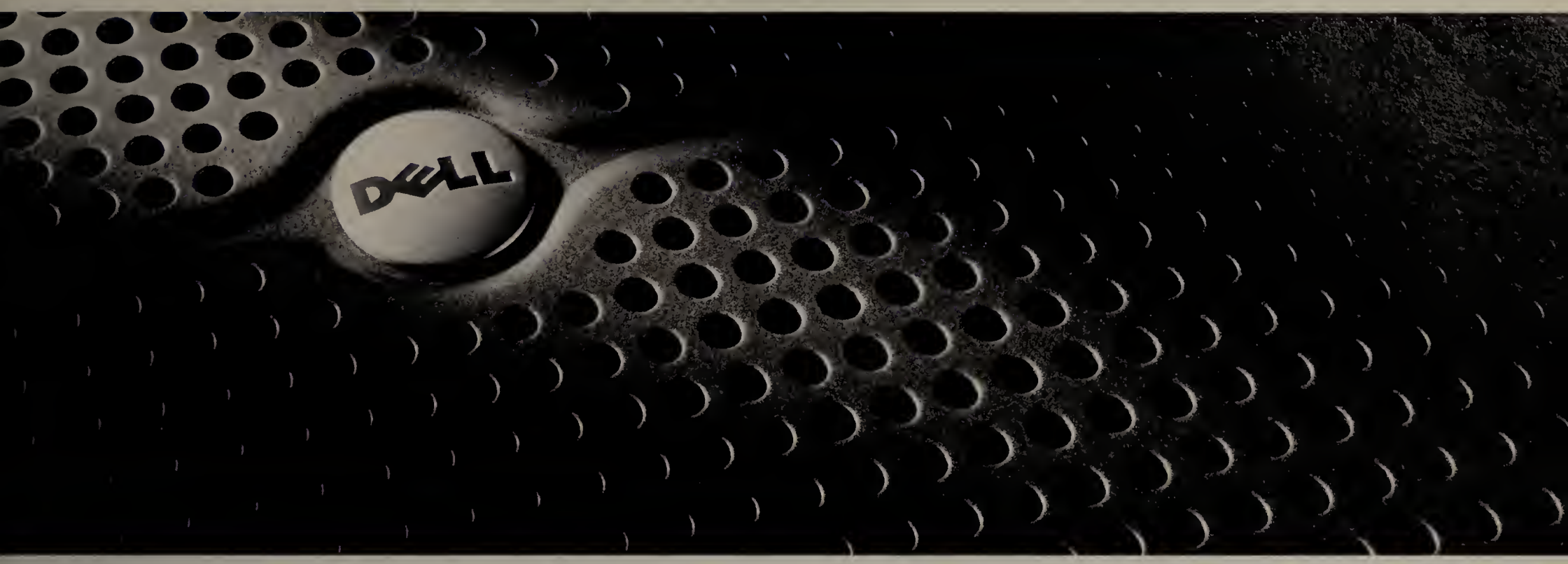

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Special Focus

CONFERENCING: Video, audio and Web collaboration technologies.

Travel's loss could be conferencing's gain

■ BY DENISE PAPPALARDO AND CAROLYN DUFFY MARSAN

While many Americans have vowed not to let last month's terrorist attacks on the U.S. change their ways of life, it's clear that some things will never be the same. Business travel is likely to be one of them.

Many companies are looking harder than ever at alternatives to flying, as fewer flights are available, airport waits lengthen and security concerns increase. While video-, audio- and Web conferencing are not brand-new technologies, companies have started giving them a second look or beefing up their usage of them.

The National Business Travel Association found that more than half of the 60 travel managers it interviewed the week after the attacks said their companies were reducing travel and more than half of them have already done so (although the attacks were not the only reason cited for the travel cutbacks). Close to 90% of those surveyed expect to deploy videoconferencing gear or services to keep communications strong while travel is down.

While conferencing technology is often cited as "the next big thing" whenever there is an airline strike or plane crash, the fact that the events of Sept. 11 happened in the U.S. and were so unprecedented in scope should result in a sustained increase in usage this time around, says Andrew Davis, managing partner at consulting firm Wainhouse Research.

Conferencing at Xerox

Xerox is one company that has already seen a swell in conferencing usage among its employees since the attacks. Xerox, which uses video-, audio- and document-conferencing services from WorldCom in its offices around the world, went from approximately 10 to 15 videoconferences per month to about 20 to 30 in recent weeks, says Gary Foley, manager of global conferencing services. A week after the attacks, Xerox had to dust off some of its PictureTel videoconferencing systems that weren't being used in order to meet increased demand.

Close to 90% of those surveyed expect to deploy videoconferencing gear or services to keep communications strong while travel is down.

Although Xerox does not have an official restriction on travel, employees are traveling at their own discretion, Foley says.

Employees are being asked to give more consideration about the locations where they may have to travel and whether it's absolutely necessary for them to be there in person.

Earlier this year, Xerox began encouraging employees to use conferencing as a travel alternative, but also to use conferencing smarter, Foley says. Employees were asked to only use videoconferencing — the most expensive of the three conferencing services — when they really needed to see the other person. Whenever employees are planning a videoconference, they should ask if Web-based document- or audioconferencing might work just as well, he says.

Audio- and Web-based conferencing are more convenient for most employees because they can set them up from their desktops, Foley says. With video, they have to go to the room where the equipment is deployed.

In any given month, Xerox employees use 40,000 to 50,000 audio- and document-conferencing lines, Foley says. He does not have the exact numbers on increased usage but knows it's significant. WorldCom told Foley that it has had customer service people working 12- to 16-hour days to handle the onslaught of calls for audio- and Web conferencing since Sept. 11.

On a smaller scale

While Xerox is pleased with WorldCom's offerings, another organization has enjoyed the benefits of going with a smaller service provider.

Los Angeles law firm Paul, Hastings, Janofsky and Walker switched from using AT&T's and WorldCom's teleconferencing services to Latitude Communication's MeetingPlace about 18 months ago. MeetingPlace is a Web-based service that provides audioconferencing, presentation viewing and document sharing. Built on Microsoft's NetMeeting software, MeetingPlace lets attorneys schedule and cancel Web-based meetings through the group calendar built into Microsoft's Exchange e-mail software.

"The return on our investment was very quick," says CIO Mary Odson. "Now we're just paying for an inbound toll call, which is under three cents per minute. We saved money really quickly just in using MeetingPlace for all our internal teleconferences, and it is providing benefits for our clients as well."

Use of MeetingPlace been steady since the terrorist attacks, Odson says. The law firm used MeetingPlace to conduct an all-day meeting Wednesday, Sept. 12, that was originally scheduled for its New York City office.

"We are now promoting MeetingPlace again to people who may not have taken advantage of its capabilities in the past," Odson says.

The law firm provides its workers with a VPN that lets them dial in to MeetingPlace from home or other remote locations. Currently, attorneys at the law firm's seven locations in the U.S. can access MeetingPlace via a Web browser through a central server in Los Angeles.

Although the law firm plans to add access to MeetingPlace for its Tokyo and London offices, Odson doesn't expect the software to replace business travel. "We anticipate as much travel as we had in the past," Odson says. "The way our attorneys work, they practice globally, so travel is key."

But the company may need to add another T-1 line to support increased demand, she says.

Another alternative for businesses is to use meeting space from a company such as HQ Global Workplaces. The Dallas company offers businesses professional meeting rooms that include video-, audio- or Web conferencing in 400 locations in the U.S. and overseas.

Users who anticipate difficulties in pulling off their next sales meetings can instead choose to team with a company that will set up meeting rooms in multiple cities and even cater food.

This may be a solid alternative for users who do not anticipate major changes in the way they travel in the long run. Instead of buying a Web conferencing service or a new PictureTel system, users can hook up with a company such as HQ to set up conferences from time to time.

HQ uses videoconferencing gear from Polycom, PictureTel and Tandberg, says Carla Clements, a product manager. The company connects its various sites via AT&T ISDN services, she says.

Call volumes at HQ have nearly quintupled since the terrorist attacks, Clements says. People called to ask about the company's services and to book conferences across the regions where the company has offices. "Confirmation bookings have tripled," she says.

One other point that existing or potential conferencing customers should consider as demand increases and more companies try to cash in on the demand: Prices for equipment and services are likely to drop. So just as airlines are gearing up to offer big ticket discounts, there could also be some conferencing bargains in the not-to-distant future. ■

You're grounded

A new survey of 60 corporate travel managers found that less travel is planned in the wake of the recent terrorist attacks on the U.S. . . .

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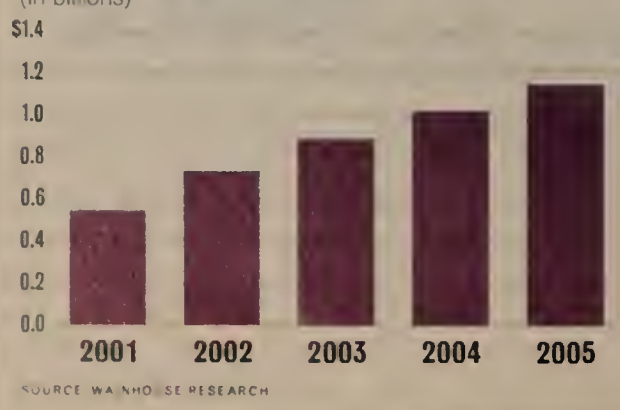
. . . a trend that should boost demand for videoconferencing systems.

Projected revenue for videoconferencing hardware



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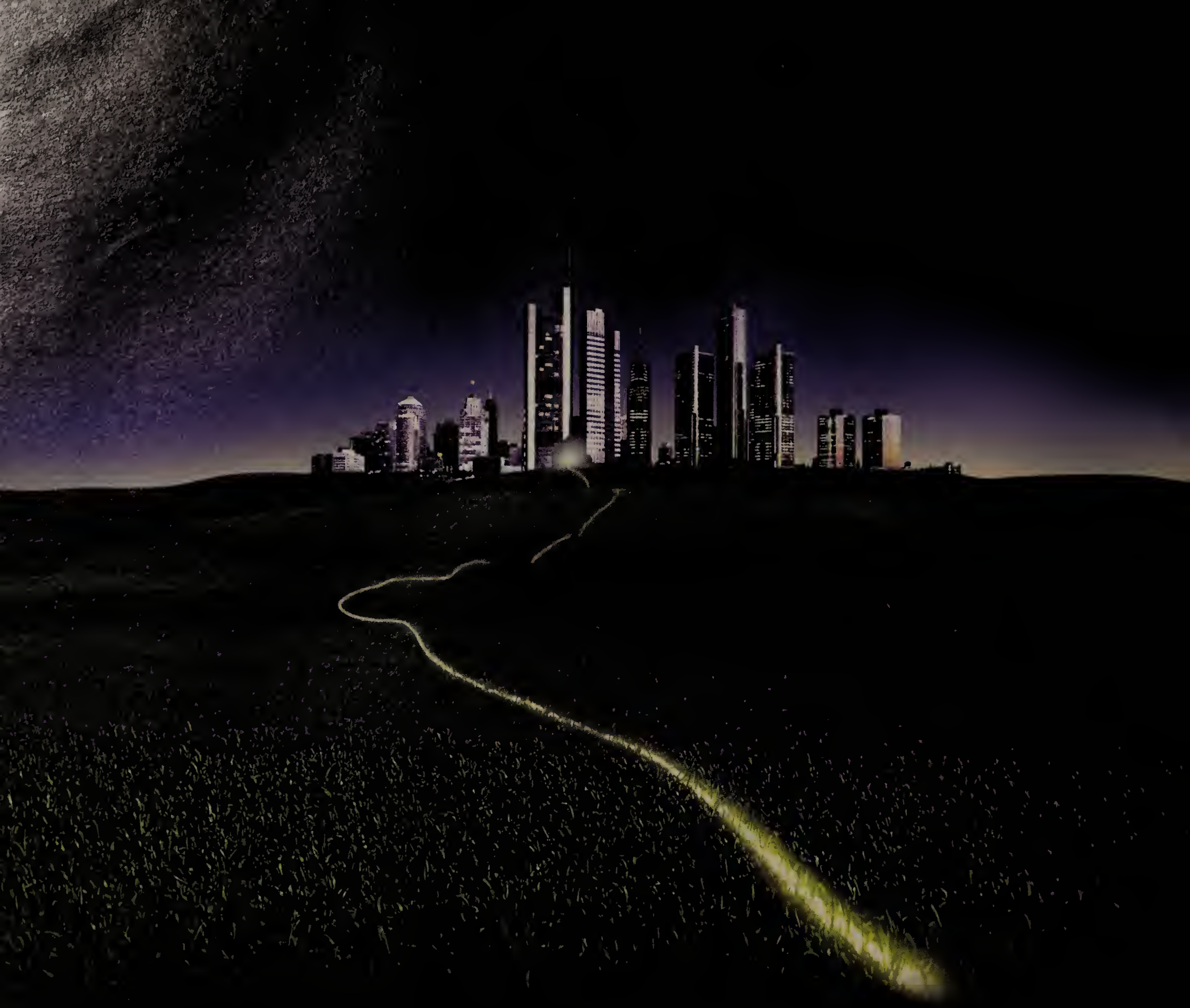

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■ SERVICE PROVIDER DEVELOPMENTS AT THE JUNCTURE BETWEEN THE ENTERPRISE AND THE NEW PUBLIC NETWORK

Riverstone to make IP routers more SONET-like

■ BY PHIL HOCHMUTH

SANTA CLARA — Riverstone Networks this week will unveil software for its metropolitan Ethernet routers designed to give service providers SONET-like reliability in IP routing equipment.

Riverstone's Hitless Protection System (HPS) software can be installed on an existing Riverstone box to let a router with dual control modules failover more quickly than a similarly configured device with one active control module and one "warm standby" card. Riverstone says the software can cut router downtime caused by component failure or equipment maintenance from 10 minutes to 8 seconds.

HPS establishes a "heartbeat" communication link between redundant control modules, letting a primary control blade update its backup every second with information on what the router is doing. If the primary module goes down or is taken offline, the back-up control module can take over all routing functions within 8 seconds, the company says.

Previously, Riverstone routers configured with dual-control modules — as well as similarly configured competing products — could take up to 10 minutes to recover, Riverstone says.

HPS also lets service providers implement a single redundant router as an alternative to having two separate routers that use Virtual Router Redundancy Protocol (VRRP) for failover, Riverstone says. While VRRP can improve router failover to 1 minute of downtime, the company says, HPS is still faster and does not require the deployment of two chassis, which can be expensive in terms of equipment and colocation space costs.

The HPS software upgrade is available in Version 8.0 of Riverstone's router software, which is available as a free upgrade for all Riverstone router models.

Riverstone's resilient packet push

In addition to HPS, Riverstone during the next few months will introduce several other software and hardware features for its metropolitan Ethernet routers intended to boost reliability of router hardware and software-based functions.

Next month, Riverstone is expected to release its own version of Resilient Packet Ring (RPR) technology with its Rapid Ring Spanning Tree (RRST) software. RPR is an emerging standard that takes advantage of the dual fiber-optic ring topology of SONET networks — if the primary ring fails, the back-up ring kicks in and moves traffic in the opposite direction.

RPR would use both rings to transmit traffic and implement quality-of-service prioritization to traffic flows in the event of a line break, giving higher-priority flows, such as IP voice, more bandwidth on the back-up ring over lower priority traffic, such as e-mail or music downloads.

According to Riverstone, its RRST software — based on the IEEE 802.1w Rapid Spanning Tree algorithm — could be used to introduce basic SONET-like link recovery functions for Ethernet switches deployed in a ring topology where traffic flows in one direction. In case of a link or node failure on a metropolitan Ethernet ring, RRST soft-

See Riverstone, page 32

Riverstone's goal: Rock-solid routers

HPS runs on all Riverstone routers, including the RS 38000.

Along with its Hitless Protection System (HPS) software for its routers, Riverstone will soon introduce other features to make its IP routing equipment more SONET-like:

- Rapid Ring Spanning Trees
- Riverstone Racket Ring technology
- MPLS failover

Short Takes

■ The **Resilient Packet Ring Alliance** announced that the IEEE 802.17 working group made progress on the draft development of the standard. During a meeting in San Jose, members made more than 30 detailed technical presentations. Attendees also agreed on the outline of the final draft. The RPRA says it had a record turnout of 142 attendees. The RPRA also says that **Chip Engines**, a semiconductor company, is the first to develop a family of integrated circuits based on RPR. The firm is a new member of the alliance, which is now composed of 17 companies. www.RPRAlliance.org

■ ATM switch start-up **WaveSmith Networks** last week announced a service to assist users in deploying its Distributed Node switch. The WavePro Customer Care Program provides training and support services online and offline, as well as supplemental consulting and project management resources. Questions are answered 24-7, 365 days a year, it says. www.wavesmithnetworks.com

Tsunami's new low-end optics products

■ BY TERRI GIMPELSON

Tsunami Optics last week announced three new metropolitan optical access products designed to let service providers reduce the cost of provisioning high-bandwidth services to companies.

The products are an integrated four-channel coarse wavelength division multiplexing mux/demux, an eight-channel CWDM multiplexer, an eight-channel demultiplexer and a CWDM add/drop module that can add and drop up to four wavelengths per fiber. CWDM reduces the cost of provisioning optical access services because it uses uncooled lasers rather than cooled lasers used in dense wavelength division multiplexing (DWDM) systems.

The four-channel mux/demux is called the MetroChannel I-4. It couples a multiplexer and demultiplexer into one module, and can combine up to four wavelengths onto one single-mode fiber or separate four wavelengths onto separate fibers.

Each wavelength operates with 20 nm separation to prevent cross-talk, and is protocol and bit-rate independent, Tsunami officials say.

The eight-channel products — the MetroChannel M-8 multiplexer and D-8 demultiplexer — are separate modules that combine or separate eight wavelengths onto a single-mode fiber. Like the I-4, the M-8 and D-8 are bit-rate and protocol independent and operate with wavelengths spaced 20 nm apart.

The MetroChannels AD-1, AD-2, AD-3 and AD-4 are coarse wavelength optical add/drop modules (OADM) that can add and drop from one to four wavelengths onto a single-mode fiber. The OADMs also operate with the same 20 nm spacing between wavelengths and are protocol and bit-rate independent.

The new products are Telcordia- and NEBS-compliant, and support wavelengths from 1,471 nm to 1,611 nm.

Tsunami says the products were designed to fit into a metropolitan-access network that transports bandwidth less than 60 or 70 kilometers. None of the products uses amplification to transport wavelengths, Tsunami says.

Karen Liu, director of optical components at consulting firm RHK, says the value-proposition Tsunami offers with CWDM technology is the lower cost associated with using uncooled lasers.

"That's the real competitive side of the equation," she says. "Tsunami is the first to develop this kind of product to really help reduce costs. Before this there was a big jump from a single wavelength system to DWDM. This fits into that gap for cost and function."

LuxN has a similar offering with its WideWav product line, as does ONI Systems with its Online 2500. Ocular Networks' OSX access switch and Riverstone Networks' RS1600 also have CWDM capabilities. NEC can support CWDM in its MG8000 Gigabit Ethernet multiplexer.

The products are shipping now, and start at $290 per wavelength, Tsunami says.

Tsunami: www.tsunamioptics.com

More online!

See how CWDM stacks up against passive optical networks.

DocFinder: 6232

Nortel's alternative for metro Ethernet recovery

■ BY TERRI GIMPELSON

Nortel is offering service providers an alternative to a recently ratified standard for recovering Ethernet networks, one the company claims makes better use of redundant switches, links and bandwidth.

The company is pitching its Split-Multilink Trunking Protocol (Split-MLT) technology as an alternative to the IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for reconverging metropolitan Ethernet networks. Split-MLT, announced by Nortel last spring, is targeted at carriers looking for a way to make data services more profitable by providing more reliability for Ethernet services than subsecond recovery time, Nortel says.

Split-MLT is based on the IEEE 802.1ab multilink trunking protocol, which is designed to enable back-up links from a group of high-bandwidth trunks and traffic-load balancing across those trunks. As such, Split-MLT lets service providers configure redundant paths to a company or multitenant building without routing protocols such as Open Shortest Path First or Routing Information Protocol, Nortel says.

The software runs on Nortel's Passport 8600 Ethernet/IP routing switch.

Gary Southwell, Nortel's director of optical Ethernet product marketing, says the company sought to address three Ethernet reliability issues with Split-MLT: link and node failure, conversation preservation and maximum bandwidth utilization.

For link and node failure, Split-MLT makes a pair of aggregation switches look like a single switch to the rest of the network. The switches communicate Media Access Control (MAC) addresses between each other using Split-MLT and the Virtual Router Redundancy Protocol.

Both switches, connected by multiple Gigabit Ethernet links, learn destination MAC addresses of traffic from switches connected to one of the Passport 8600s. If one node fails, Split-MLT ensures the remaining node has the destination MAC address information to forward traffic on behalf of the primary switch, Nortel says. This is done on a per-session basis, which helps ensure conversation preservation.

If one of the links between the switches is lost, Split-MLT spreads sessions over the remaining working links. Nortel claims this makes more efficient use of available bandwidth by eliminating the wasted redundancy fiber that is used only if a failure occurs.

While Split-MLT might seem to be a more feature-rich alternative to RSTP, it still does not provide the 50 msec recovery of SONET, which is the benchmark every service provider considering Ethernet is shooting for.

"The one-second recovery time Split-MLT has is the same for RSTP," says Sterling Perrin, an analyst at market research firm IDC. "And if you look at this technology as an alternative to SONET equipment, it doesn't really meet the requirements of sub-50 msec recovery that SONET alternatives need to aim for."

Perrin says Resilient Packet Ring and next-generation SONET proposals such as Multiservice Provisioning Platforms (MSPP) are closer to what service providers are looking for in terms of Ethernet/SONET hybrids.

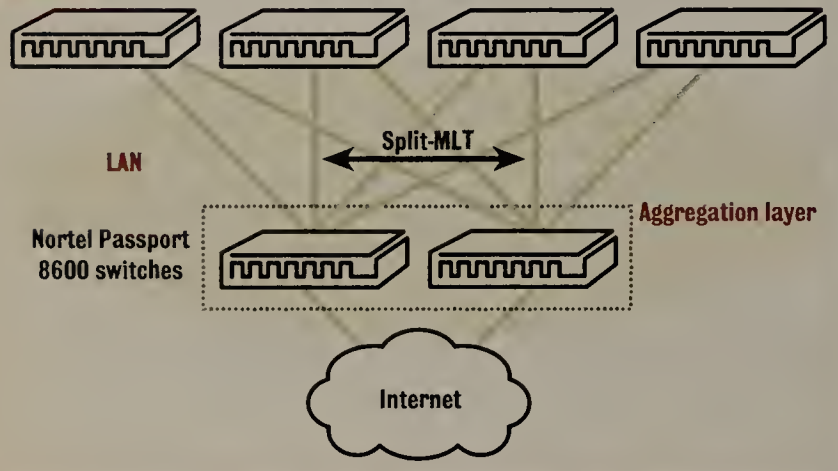
Split-MLT has shipped on the Passport 8600 since July. Southwell says Nortel is now working to make Split-MLT work in the long-haul network using a tagging mechanism and an Ethernet User-to-Network Interface to keep customer traffic separate.

Nortel: www.nortel.com

Split-MLT

■ HOW IT WORKS

Split-MLT addresses Ethernet reliability by making use of redundant links in addition to providing 1-second recovery.



1. LAN traffic is forwarded to the Nortel 8600 switches at the aggregation layer, and from there it is flooded out to all ports.
2. Split-MLT supports Virtual Router Redundancy Protocol and Multi-link Trunking Protocol (MLT) 802.1ab. Unlike MLT, Split-MLT allows traffic to be shared among three switches, making the network more redundant in case of a node or port failure.
3. Once the Nortel 8600 switches receive a response from the destination port, both memorize the port's location. In memorizing and sharing this information, the boxes are prepared to handle traffic should one box fail.

Riverstone

continued from page 31

ware would identify the outage and redirect traffic in the opposite direction, the company says.

"This is the poor man's version of RPR for pure Ethernet over dark fiber networks," says Steve Garrison, Riverstone's director of corporate marketing.

Riverstone is also expected to release new line cards for its high-end metropolitan routers, which include the RS 8000, 16000 and 38000 models. The line cards will interoperate with Cisco's proprietary version or RPR, called Dynamic Packet Transport.

Riverstone says the line cards will be aimed at letting service providers work its gear into Cisco-based metropolitan-area networks. Costs haven't been set, and a release date wasn't disclosed.

Riverstone is expected to release software upgrades in January for its Multi-protocol Label Switching line cards that provide MPLS tunnel failover for traffic flows. The software would set aside a bandwidth "reservoir" that could pick up traffic from a failed MPLS tunnel.

Riverstone: www.riverstonenetworks.com

Vibrant Solutions wants to see the money

■ BY JIM DUFFY

FAIRFAX, VA. — Software developer Vibrant Solutions this week will unveil a suite of applications that add a twist to traditional billing, inventory, mediation and operations support system packages for service providers.

Formed in May by the merger of three separate firms, Vibrant will roll out Business Intelliegence Suite, a package that performs financial analysis of network operations and transactions between service providers. The bundle runs on a new Vibrant software platform called ViewLogic that provides the user interface and interactive environment for Business Intelligence Suite.

The software runs on servers distributed throughout the service provider network or collocated with mediation systems. It collects data from operation support systems (OSS), billing, inventory, provisioning and mediation systems, and from network elements such as switches. It then turns data into reports used for financial analysis and auditing, such as accounts payable.

Collected data examples include billing systems invoices, IP data records from switches, network inventory, network event records, and tariffed-service and bandwidth-rate information. Instead of competing with OSS, billing, inventory and mediation systems, the software draws on these systems as data sources.

"One of the business problems out there today is that lack of view into the financial aspects of the carrier's business," says Yankee Group analyst Jason Briggs.

Although Vibrant's new software will complement existing operations and billing systems, it will also compete with some specific functions performed by them. For example, Business Intelligence Suite is designed to automate the process of billing for interconnect charges a service provider incurs for linking to another service provider's net.

Tracking and invoicing interconnect usage has usually fallen under the domain of specialized and general-purpose billing systems, Briggs says. But Vibrant software is designed to automate this process.

Automating interconnect billing will be key to the acceptance of the Vibrant software. Between 50% and 60% of carriers' revenue is consumed by interconnect costs, and the error rate in these invoices is typically 8% to 12%, Vibrant says.

ViewLogic and Business Intelligence Suite will undergo trials in December and will be available in January 2002. Pricing is customer-specific.

Vibrant: www.vibrant-1.com

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Fun fact:	Vibrant was formed by the merger of three companies: InformationView, Network Audit Control and TeleCon.

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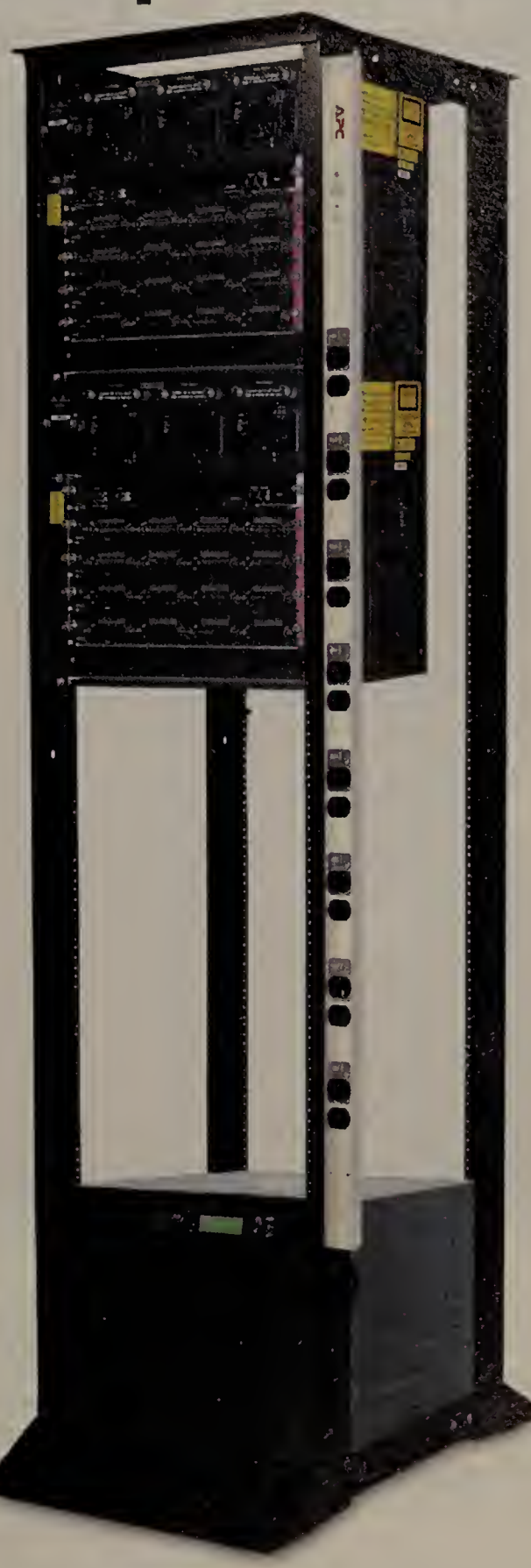

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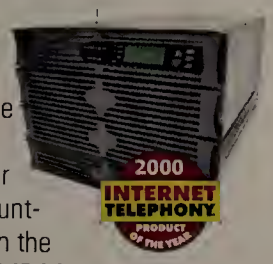

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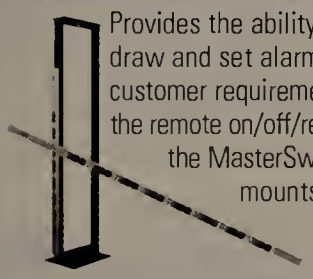

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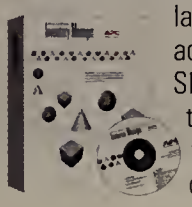

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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Multirouters enable real private nets

■ BY MATTHEW GLENN

Incremental changes have made routers faster, denser and generally more efficient, but their fundamental monolithic architecture, in which one processor performs all routing calculations, has not changed.

This has become a serious bottleneck and design constraint when it comes to cost-effectively deploying and scaling new broadband services, particularly at the network edge.

One possible solution is multirouter technology in which a single physical router can be partitioned for multiple customers. Multirouter technology provides complete autonomy, isolation and control between multiple routers operating within a single physical device.

Conventional routers are architected with a single centralized processor that performs routing calculations, exception processing and management of the router. But at the network edge, where users are aggregated and services applied, there's an overwhelming requirement for more route processing power. Unfortunately, monolithic routers can't effectively scale control-plane processing because of this design limitation.

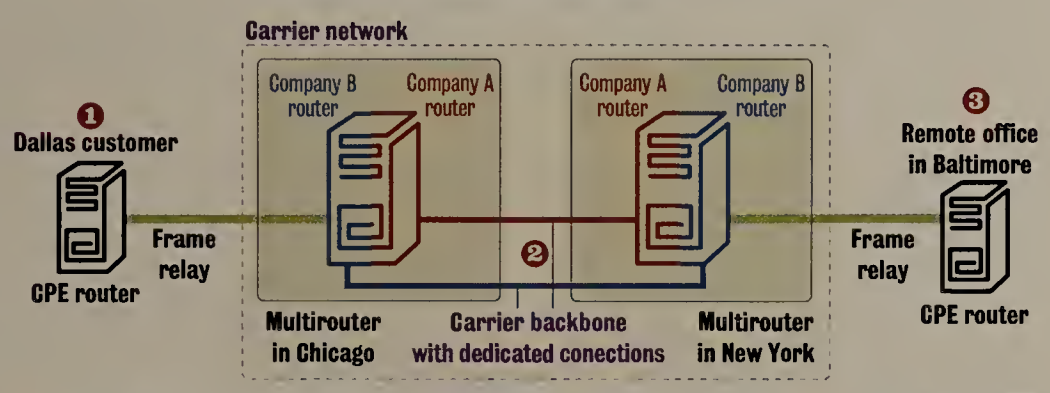
Multirouter technology allows the concurrent and independent operation of individual routers and associated routing protocols on separate routing engines (route processors with dedicated memory) within a single device. Multirouter technology typically employs separate and redundant multigigabit data forwarding and control-plane fabrics to ensure resilience and scalability.

With multirouter technology, each router can run its own protocols, policies and security, and maintain its own separate routing and forwarding tables — keeping the autonomy of each corporation or service provider intact. This is accomplished by distributing throughout the system dedicated route processing, memory and other hardware resources for each router.

■ HOW IT WORKS

Multirouter technology

Multirouter technology could enable customers to build private networks consisting of partitioned space on multiple, distributed routers.



1 A customer leases a router within a multirouter system from a carrier and can then configure his own security, policies and protocols.

2 The carrier provisions routers and provides dedicated connections between routers.

3 Branch offices access routers using frame relay or ATM.

Because multirouter technology distributes and dedicates multiple route processing engines, processing power scales linearly as more ports are added. Reliability is strengthened as a result of the physical partitioning of each router's traffic.

Multirouter technology also lets any port be attached as a dedicated resource to any router within the system. Flexible port assignment gives service providers the option to lease bandwidth, ports and resources as needed, enabling better optimization of the infrastructure and the ability to begin selling routing by the port.

Because multirouter technology enables multiple routing environments to operate concurrently, multitiered management is essential.

Multitiered management provides discrete views and controls for router owners and customers. Individual, discrete routers and associated router resources, such as memory, bandwidth and I/O, for each customer are provisioned by the carrier. Autonomous control and complete management is handed over to the router customer, who then configures and manages the router with the desired protocols, access control lists and other features.

Multirouter technology opens the door to important new carrier and enterprise applications, such as optimizing and collapsing the network edge, routing as a service and the creation of real private networks (RPN).

Because multirouter systems support the concurrent and autonomous operation of multiple routing environments, the ability to offer physical routers as a service to providers is now possible. This dramatically reduces capital expense and operational costs, and speeds time to market for service providers.

For corporations, multirouter technology enables the creation of RPNs. RPNs let carriers give each company its own physically distinct routers and private lines at cost levels comparable to virtual networks. Corporations do not have to sacrifice control, privacy or performance to save money. Unlike frame relay and ATM VPNs, RPNs are fully routed networks with all the flexibility and connectivity of IP.

Using RPNs, multiple corporations can flexibly purchase bandwidth by the port (as necessary) and use a single carrier backbone as if it were their own private backbone without the costs associated with building a backbone.

With multirouter technology, companies can rethink the fundamental role and use of the router in their networks to save time and money.

Glenn is a co-founder of Allegro Networks. He can be reached at matt@allegronetworks.com.

Ask Dr. Internet

By Steve Blass

My company is moving from a peer-to-peer network to a Windows 2000 Small Business Server domain network. We have to travel back and forth from each location with a Windows 98 laptop. Is there an easier way, like a batch file, that would reset the network settings back and forth to accommodate each style of network? The transition won't be completed for a few months.

Windows controls the network parameters you want to automatically change through the registry. The registry stores values by key names. The easiest tool for reading and writing registry keys and values is regedit. First, back up your system, then you can back up the registry. From the start menu, choose run and type "regedit" in the dialog box and press enter. Inside regedit, choose the command "Export Registry File" from the Registry menu. The registry file will be saved with a .reg file extension by default. You can reload these settings later with the "Import Registry File" command. Double clicking a *.reg file in Win 98 loads the registry settings from that file. Create a registry file for each configuration, and you can load the settings by double-clicking. Do not reload the entire registry each time. Use a tool such as Windiff from your Win 98 CD or CSDiff from the 'Net to identify keys that change between environments and create reg files that contain those values.

Blass is a network architect at Change@Work in Houston. Send Internet and network-related questions to him at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark Gibbs

Proxomitron poses problem

Last week we delved into Proxomitron, an excellent (and free) HTTP proxy designed to automagicly edit incoming content on the fly to remove things such as pop-ups, pop-unders and nosey JavaScript. We discussed Proxomitron's search and replace specifications and how they are used, and this week we'll discuss how Proxomitron revealed other software doing things we could live without.

One of the neat features of Proxomitron is an HTTP message logger. This is launched from Proxomitron's main window, which is accessed from the system tray.

The logger displays the headers of HTTP requests and responses proxied by Proxomitron, and for each response lists the rules that are applied to the content. Oddly, we noticed that every few minutes, the Proxomitron logger would show HTTP exchanges between our PC and a couple of Web sites.

This is what we saw in the logger for a request to one of the mysterious sites:

```
GET /un?2130212 HTTP/1.0
Accept: */*
PEABODY-VER: 1.4
PEABODY-SWVER: 2.0
PEABODY-OS: WIN
PEABODY-OSVER: 4.10.1998
PEABODY-UID: E50486C2A46C11D59733
00A0CC231387
PEABODY-LASTUPDATED: 11
PEABODY-UNINSTALL: 1
User-Agent: SpaceBison/0.01 [fu] (Win67;
X; SK)
Host: ps1.streamingcash.com
Pragma: no-cache
```

In the above case, the target site is "ps1.streamingcash.com" and the GET request is "/un?2130212." (The User-Agent header string "SpaceBison" is the ID of Proxomitron and, no, we have no idea why.)

When we browsed the sites — ps1.streamingcash.com and bis.180solutions.com — we found nothing intelligible. The chase was on.

To make a long story short, it came down to spyware — a topic we discussed some weeks ago (www.nwfusion.com, DocFinder: 6228). The streaming cash.com access is the action of a piece of spyware called SVAPlayer from QuickFlicks. We installed this software when we were checking out another application called WeatherBug. SVAPlayer, which delivers headlines and other "stuff," was an installation option. Little did we realize that SVAPlayer would be so impolite.

The other Web site that was being deviously accessed — bis.180solutions.com — is the goal of a nasty piece of software called msbb.exe (which, despite what you might assume, has nothing to do with Microsoft — it is apparently from a company called Web3000 at www.web3000.com).

Msbb.exe seems to live (at least on our system) in the subdirectory "c:/program files/n-case." We were gifted this piece of spyware by installing a screensaver called "Fireworks" that we downloaded from Galt Technology.

This swinish software records all the URLs you request for, we believe, the previous 24 hours and stores them in a file called "fiz1" which, we further believe, is regularly uploaded to the target server.

Worst of all, we are even further led to believe that msbb.exe will hang on to your PC with the tenacity of a terrier worrying a bone. Not only are there registry entries that try to start the program at bootup but we have also read that there is a helper application that attempts to replace msbb.exe and its registry entries if you should delete them. Any information you may have on this topic would be most welcome.

Anyway, it turns out that the Lavasoft Ad-Aware spyware blocking system (www.nwfusion.com, DocFinder: 6229) rather disappointingly can't detect either of these versions of spyware. We finally got rid of SVAPlayer by deleting everything associated with it (interestingly, despite having deleted its companion, Weatherbug, there was still a registry entry to run one of Weatherbug's background processes that wasn't removed).

A similar exercise was required to get rid of msbb.exe. To find all of the registry entries that run the components of these vile pieces of software, we recommend an excellent, neat and free utility called Startup Control Panel by Mike Lin (see www.mlin.net/StartupCPL.shtml and check out his StartupMonitor — www.mlin.net/StartupMonitor.shtml — a tool that monitors and manages applications that try to install themselves to run at startup).

So the moral is start checking your networks now to see how much spyware is running and how it got installed. And let us know what you find — we will treat your revelations with the utmost secrecy.

Next week, we'll wrap up Proxomitron. Honest. Diversions to gearhead@gibbs.com.

CoolTools

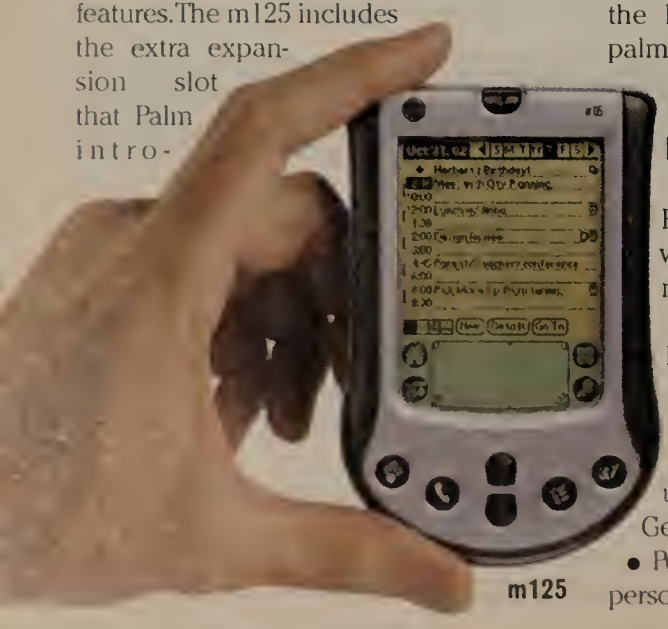
A roundup of the latest neat stuff

Compiled by Keith Shaw

Almost everyone in the PDA world is gearing up for the holidays by rolling out new models. Here's a rundown on PDAs from Sony, Handspring and Palm.

Palm debuts m125

Think of Palm's m125 model as an update to the entry-level m100 series that Palm launched this year, but with more features. The m125 includes the extra expansion slot that Palm introduced in its m500 series, where you can use a MultiMediaCard or a Secure Digital card to add things such as extra memory and games. The m125 sells for about $250 and is available now. The m125 runs on a Dragonball VZ 33-MHz processor, operates on two triple-A batteries, has 8M bytes of RAM and includes Version 4.0 of Palm OS.



m125

The bundled software includes nine applications, including DataViz's Documents To Go (view and edit Word and Excel documents), PocketMirror (synchronize with Outlook), Palm Reader (eBook reader), Palm Mobile Connectivity Kit (connect wirelessly to an Internet account via a mobile phone or modem) and AvantGo Mobile Internet Service, among others.

For users who care about style, Palm offers 19 different face plates to customize the look of the device. Go to www.palm.com/products/palmm125 for more information.

More PalmPaks available

Palm is also introducing five PalmPak cards, Secure Digital cards that will work with the m125, m500 and m505 models. They are:

- PalmPak Travel Card: RandMcNally Road Atlas gives users maps, driving directions and points of interest in the continental U.S.
- PalmPak Language Translator: lets users translate English, French, Italian, German and Spanish phrases.
- Personal Finance Series eBook: seven personal finance books.
- Mystery Book Series: six books by Michael Connelly.
- Science Fiction: one trilogy and seven stories by Peter Hamilton.

The PalmPaks range in price from $30 to $40 and should be available in November from Palm's Web site.

Sony updates Clie PDA

Sony announced that its new Clie N760C would be available in October for around $500. The N760C includes the Palm OS Version 4.1, compatibility with Microsoft's new Windows XP operating system, a screen that displays more than 65,000 colors, and a built-in digital audio player. The device has 8M bytes of RAM and can play native MP3 and encoded ATRAC3 audio files. It can also read the audio files directly from a Memory Stick (8M bytes included).

The device runs on a Dragonball VZ 33-MHz processor, includes a jog dial (for one-handed navigation), has a Universal Serial Bus cradle, runs on a lithium ion rechargeable battery and weighs about 5.65 ounces. With a Memory Stick you can also install Palm OS-based applications directly instead of performing a HotSync.

For users of the nonaudio Clie models, Sony also launched the PEGA-SA500 MP3 module, which will cost about $130. The module enables MP3 playback on the N610C, S320 and S300 handhelds, by connecting to the serial port of those devices.

For more information, go to www.sony.com/clie.

Two new Handspring Visor models

Handspring recently launched two models to its PDA line. The $300 Visor Pro has 16M bytes of RAM, twice that of other Palm OS-based PDAs. The Visor Pro also includes a lithium ion rechargeable battery and a new silent alarm feature with a blinking LED instead of an audible alarm.

Visor Pro

Handspring also introduced its entry-level model, the Visor Neo, with a faster processor than the Visor Deluxe. The Visor Neo costs $200, includes 8M bytes of RAM and runs on three triple-A batteries.

Both models use the Motorola Dragonball VZ processor and have monochrome screens with 16 shades of gray. They have the Springboard expansion slot found on all Handspring models and the Fast Lookup feature, so users can check contact information more quickly with one hand.

Go to www.handspring.com for more features and details of the new models.

Shaw is reviews editor at Network World. Send news of cool tools to kshaw@nww.com.

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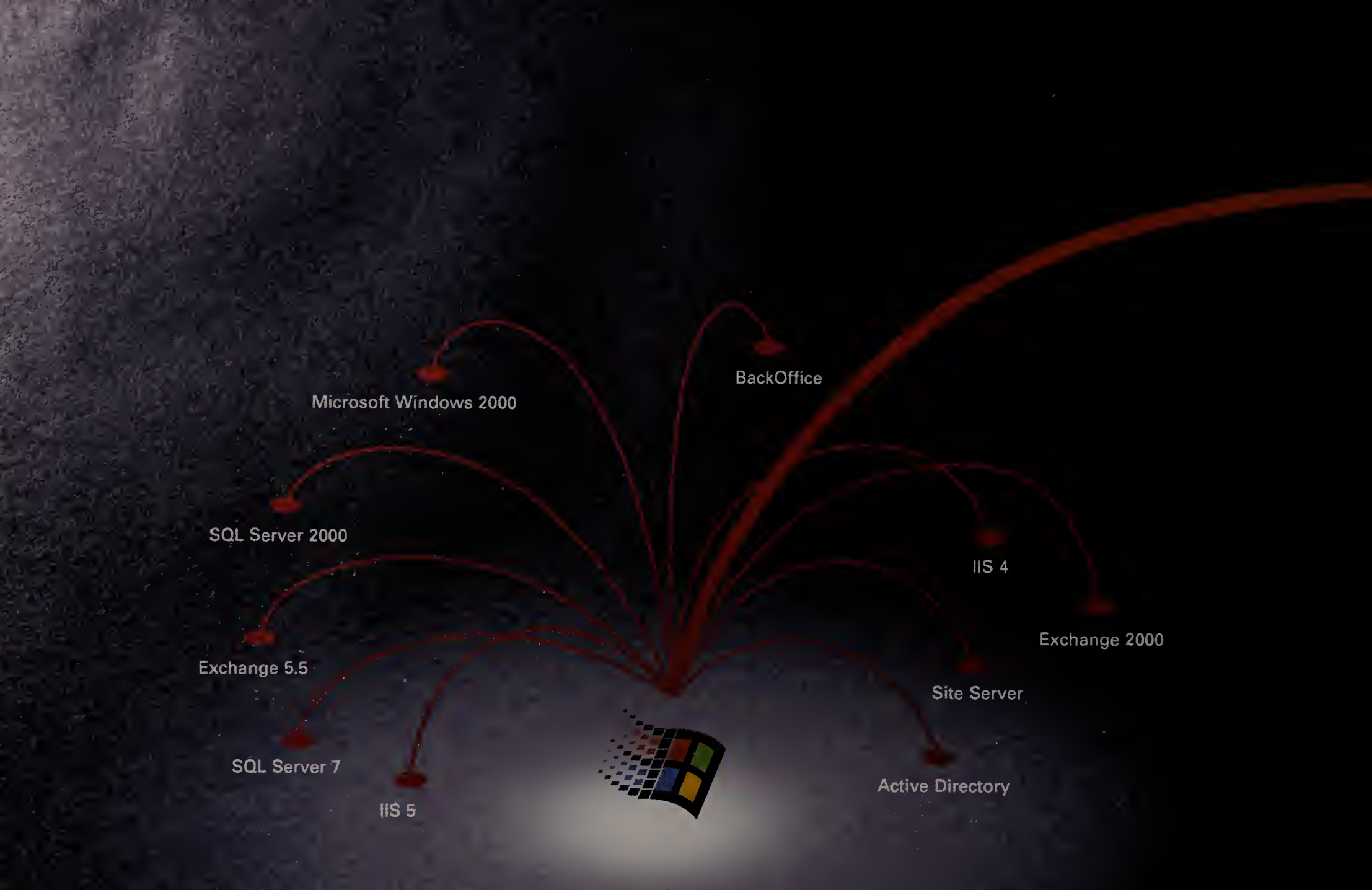

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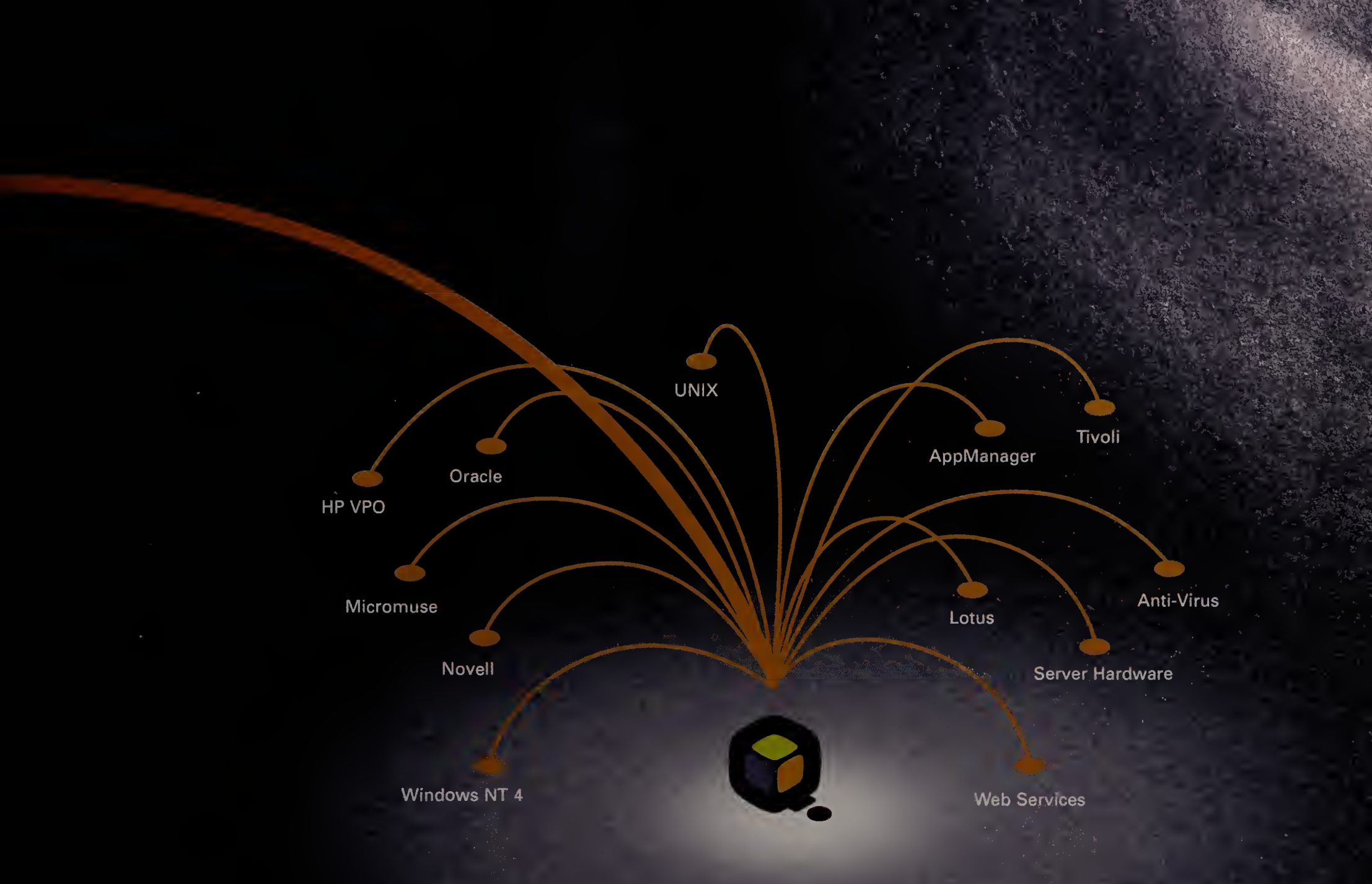

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opinions!

EDITORIAL
John Dix

Stage set for Storage Smackdown

We invited five heavyweight storage players into the ring to participate in *Network World's* Enterprise Storage Smackdown at Comdex in November, and all five have happily donned their leopard skins.

To refresh your memory, this smackdown is a playoff of the showdowns *Network World* has staged at many industry conferences. We pick a topic, challenge specific vendors to participate based on their market position and potential to influence change, and then have at it in a frank, presidential-style debate.

The wrestling metaphor seemed appropriate for this particular showdown because of the size of the players, the often cantankerous back and forth about which storage approach is best, and the enormity of the storage problem/opportunity for you, the folks that buy this stuff.

Duking it out ... I mean, discussing the relative merits of the various approaches will be:

- Jim Rothnie, senior vice president and CTO of EMC.
- David Hitz, founder and executive vice president of engineering at Network Appliance.
- Brian Truskowski, IBM's vice president of technology and strategy, storage systems.
- Jay Kidd, vice president of product marketing at Brocade.
- John Maxwell, vice president of product marketing at Veritas.

My co-host for the event is John McArthur, group vice president of storage research at IDC. We'll open things up by giving each vendor 2 minutes to spell out its basic position. Then McArthur and I will spend 20 minutes posing questions to the group, followed by 20 minutes in which the vendors will grill each other. The time remaining will be used to field questions from the audience.

Obviously this will be off-the-cuff stuff. There are no PowerPoint presentations, no practice sessions, no scripts. The vendors have to come prepared to justify their positions and, even more interesting, deflect barbs from competitors. It always makes for interesting and lively debate.

Topics will include everything from iSCSI's role in the enterprise to where network-attached storage fits in and the promise of virtualization.

And this is where you come in. Besides coming to the event to share and participate in the fun, send in your questions and ideas beforehand so McArthur and I can speak for you.

The Enterprise Storage Smackdown at Comdex Las Vegas will be from 4 to 5 p.m. Wednesday, Nov. 14, in the Las Vegas Hilton, Ballroom C. Hope to see you there and hear from you before that.

— John Dix
Editor in chief
jdix@nww.com

One size doesn't fit all

Regarding the Technology Insider on voice over IP (www.nwfusion.com, DocFinder: 6234): I think Miercom did an excellent job in identifying key issues with voice over IP and reporting the research findings in this very ambitious survey.

I also think that there is an inherent weakness with any approach that tries to combine too many types of vendor solutions into a "one size fits all" remedy. Sorting the results between enterprise and carrier solutions, IP PBXs and gateways might have been even more illuminating.

One of the key challenges facing voice over IP may not even be technology or standards; it may be the sheer amount of confusion often caused by lumping together all solutions using voice-over-IP technology, from carrier to enterprise, gateway to IP PBX. The net result is sometimes an all-encompassing yet amorphous category that perhaps defies anyone's effective understanding of what works, what doesn't and whether or not the technology is ready.

Greg Ness
Director, marketing communications
Shoreline Communications
Sunnyvale, Calif.

PC ignorance is not bliss

Regarding Mark Gibbs' Backspin column "PC ignorance — a big mistake" (www.nwfusion.com, DocFinder: 6235): You can operate an automobile without becoming an automotive engineer. A housewife trying to order a widget from an online retailer shouldn't need a computer science degree, and a secretary trying to type a letter in Word shouldn't need MCSE certification.

Years ago, I heard that when people complained about the reliability of Yugo automobiles, someone from the factory was quoted as saying that if people couldn't fix them when they broke down, they didn't deserve to have cars. There you have it: The PC is the Yugo of computers.

Roger Philipps
IS/telecommunications manager
Southwestern Battery Supply Co.
Garland, Texas

I enjoyed Mark Gibbs' column "PC ignorance — a big mistake." However, as the person many of my friends and relatives call on for help when they have PC problems, I have noticed a few things.

First, the Internet is a jungle fraught with all kinds of danger — viruses, scams, spam, cookies and so on — but this is not apparent to the average user. Second, PC operating systems, e-mail systems and browsers seem to have been written by geeks for use by other geeks. Third, most adults do not understand that they cannot break their PCs. When things go wrong, they can easily reboot but seem to be afraid to. This inhibits adults from "playing" with the PC and thus learning how to operate it better.

Norm Auspitz
Louisville, Ky.

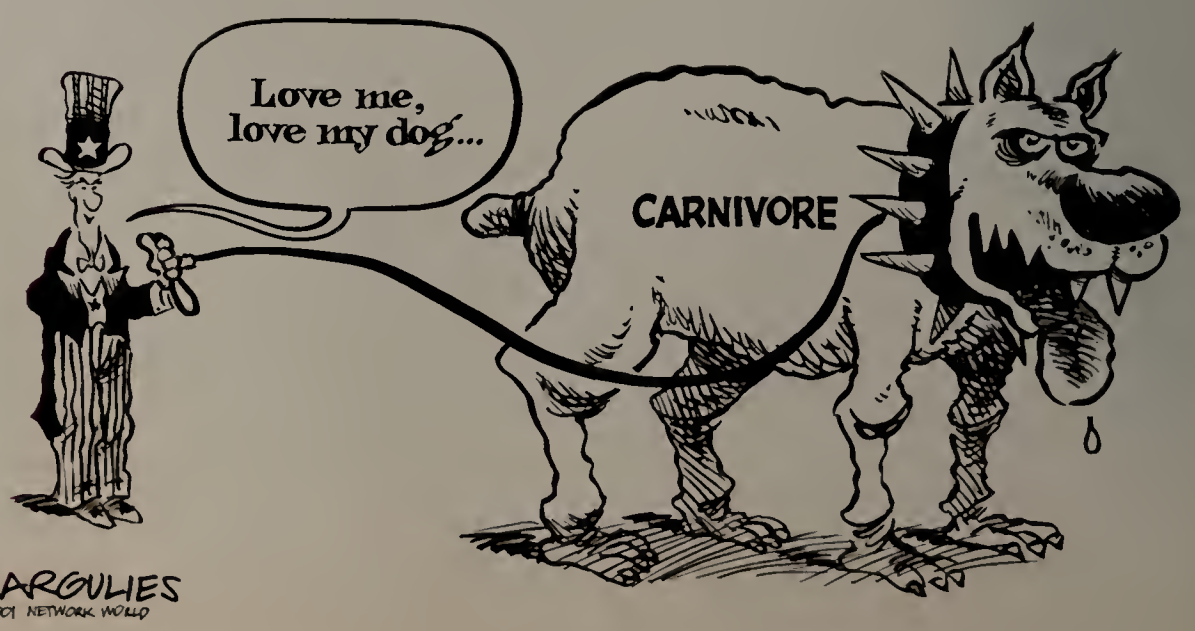
Hopeless hodgepodge

Regarding " 'Parasitic grid' wireless movement may hurt carriers" (www.nwfusion.com, DocFinder: 6236): I find it amusing that you would assert that a hodgepodge of do-it-yourselfers putting together a wireless infrastructure would take business away from any structured, organized wireless infrastructure effort. Remember how VPNs were going to kill the carriers? Last I checked, we're all still dependent on true leased lines with service-level agreements to ensure the reliability that we need.

Phil Clemens
Rochester, Ill.

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 6222**



STATE OF THE WAN

Jim Metzler

The new low-cost enterprise WAN

Today, enterprise managers are feeling pressured to redesign their WAN infrastructures primarily to save money.

A year ago, the enterprise WAN was under great pressure. Many companies felt that if they did not quickly extend their WANs to a range of customers, suppliers and distributors, they would be at a severe competitive disadvantage. Today, the enterprise WAN is still under great pressure, but of a different kind. *Network World's* State of the WAN tour will explore these changing pressures, and suggest products and services companies can implement to respond to them.

While companies still feel the need to extend their WAN infrastructures to stay competitive, the urgency of that requirement has somewhat subsided. Today, enterprise managers are feeling pressured to redesign their WAN infrastructures primarily to save money. However, the unstoppable force that is the corporate mandate to make fundamental changes in the WAN is running into an immovable object: severe budget and personnel constraints.

In terms of enterprise WAN technologies, most enterprise network departments are not excited about making major new deployments of frame relay or ATM because of their cost structure and relative lack of flexibility. However, many companies are interested in making at least a modest deployment of newer technologies, such as voice over IP and IP-based VPNs.

Over time, voice over IP will offer most companies significant benefits, including the ability to more easily deploy new applications and run a more streamlined, integrated network organization. Unfortunately, many firms considering voice over IP are motivated primarily to cut cost. While saving money is a possibility, any network professional looking at voice over IP purely to save money needs to do a careful analysis of the potential savings.

I am extremely bullish on the use of dial-up IP VPNs to support remote-access requirements. In particular, it's common for companies to spend $4 or $5 per hour to support remote workers via toll-free numbers or the public switched telephone network. In most cases, a dial-up IP VPN will lower these costs to about $1 per hour.

Site-to-site IP VPNs are more problematic. A year ago, many companies were looking at site-to-site IP VPNs, given the mandate to rapidly extend their WAN infrastructures to customers, suppliers and distributors. However, because site-to-site VPNs are not always the low-cost solution, many of these companies are taking a second look at that strategy.

Given the current pressure to cut costs in the WAN, the best strategy is to use the most cost-effective technology, from the most appropriate vendor, in each part of the network. But implementing that strategy will put tremendous pressure on the network department to better manage a range of technologies and service providers.

For more on this issue, join me on *Network World's* State of the WAN seminar tour. Head to www.nwfusion.com, DocFinder: 6226, to register.

Metzler is vice president of Ashton, Metzler & Associates, a consultancy in Newton, Mass. He can be reached at jim@ashtonmetzler.com.

NetworkWorld On the road with SEMINARS&EVENTS

ON SECURITY

Winn Schwartau

A security catharsis

Our goal posts of differing opinions are moving closer together, toward common beliefs, needs and realities.

Everything has changed. American airports will soon resemble armed camps — and we won't mind. Law enforcement will make more requests of ISPs to monitor traffic, and we won't mind nearly as much as we did before. Our goal posts of differing opinions are moving closer together, toward common beliefs, needs and realities.

We learn from our mistakes and failures, and we have to reevaluate what we think we know about security.

Information security does not exist in a bubble. It is an integral part of any protection program — commercial, infrastructure or government.

Identification cards are not proof-positive, and the fallacy of passwords screams for their eradication. Biometric identification will become an increased part of strong network authentication.

Companies will pay more attention to security vulnerabilities and spend the effort to repair them before something goes wrong. Management will give technical staffs additional tools to ensure their networks are secure and don't simply meet minimal standards.

Physical security is integral to a comprehensive protection plan. Doors and locks are as important to the security of rooms full of computers as are proper network user identification and authentication.

Physical security and information security staffs will work much more closely together. We are all becoming aware of the bigger picture and will focus less on the corporate fiefdom conflicts that have dominated.

Disaster recovery is a lot more than back-up tapes down the hall. It's all about time: How long can a company be without mission-critical data, and how often should it update back-up systems? Back-up plans will be more comprehensive and tested more regularly than before.

Job applicants will be more understanding when potential employers want to dig a little deeper into their backgrounds. They will also understand and tolerate increased reasonable company monitoring of online activities.

Management will help employees understand the bigger picture and make them part of the solution, while avoiding Draconian measures that alienate the people whose cooperation is needed. More security measures will be introduced at the desktop, at servers and throughout the enterprise, but management will go the extra mile to avoid abuse.

Human resources will no longer look at technical types as unmanageable geeks. Technical staff are integral to successful and secure operations, but companies will become more sensitive as to who are the "right" people. HR will become part of the security process in hiring, interviewing, employee monitoring and proper termination methods.

Companies will connect to other companies, people and systems with increased care and vigilance — after they disconnect those suspected weak, internetworked connections.

Practicing cyberdisasters at the corporate, civil and national levels is a worthwhile investment in security awareness for staff and citizens. Companies will increase security training and awareness through simulations and contingency management exercises to get staffs to understand the repercussions of failed network security practices.

All national events, physical or cyber, start at the local level, and the civic emergency services receive the first calls for help. This reality will become more accepted as organizations focus their attention on high-speed response to detected security-relevant events.

No longer will the specter of cyberterrorism be so easily dismissed. We really do not need to understand the motivations of potential online adversaries; we only need to understand their capabilities and prepare as best we can for unknown future electronic assaults.

The information security mantra "We're all in this together" has never been more true. None of us can go this alone. Private and government distrust is quickly being replaced by a common goal and common defense. Security awareness will spread from the IT community to management as never before, and we will finally get the "folks at home" to understand how critical security is — for all of us.

Schwartau is president of Interpact, a security awareness consulting firm (www.security-aware.com) and author of many books, including Cybershock *and* Computer and Internet Ethics. *He can be reached at winns@gte.net.*

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Five tech trends with legs

If you're doing some long-range planning, here are five developments that will shape networking for years to come.

BY PAUL DESMOND

Ask people to imagine what enterprise networks will look like in the future and they generally laugh. Most are too busy worrying about how they're going to get through next week to wonder about the technology landscape down the road.

But those who don't have to worry about keeping networks humming day to day can afford to kill some time with such musings. We managed to pin down a few people for their thoughts on five developments and issues that will shape the future: the bandwidth boom; wireless; hackers and IT disasters; outsourcing; and the breaking of Moore's Law.

Bandwidth boom

"It's the long-promised, never-delivered collaborative computing paradigm, with people working on the same document interactively."

Russ McGuire
chief strategist, TeleChoice

Demand for dedicated bandwidth will increase at a compound annual growth rate of 32% from 1998 through next year, according to consultancy Vertical Systems Group. Vendors of all stripes are rushing to meet the demand, whether by laying fiber, launching satellites or squeezing more bandwidth out of existing networks.

The bandwidth boom shows no sign of abating. Recently, Cable & Wireless and Alcatel announced they were building an all-IP transatlantic cable that would boost capacity by more than one-third vs. current cables. Lucent also announced Time Warner was buying an optical network system that uses dense wave division multiplexing and new amplifier technology to double the capacity of existing fiber.

At the same time, satellites slated to be operational within the next three years will be capable of downloading IP traffic at 100M bit/sec, with uplinks of 2M bit/sec, offering yet another alternative for "last-mile" connectivity.

As broadband fully unfolds in the consumer market, "it will substantially redefine the way that enterprises work and the way that they are integrated into society," says Sandy Fraser, director of AT&T Labs Research. "It is a much more dynamic world when communication paths rather than collocation substantiates the relationship between an enterprise and its employees."

The result will be companies that are far more distributed. Russ McGuire, chief strategist with the consultancy TeleChoice (a highly distributed organization), expects applications that he uses routinely today to communicate with colleagues, such as instant messaging, will grow to include video and other capabilities that take advantage of high-speed connections. "It's the long-promised, never-delivered collaborative computing paradigm, with people working on the same document interactively," he says.

Wild about wireless

Increasing amounts of bandwidth contributing to the boom will be delivered sans wires.

Shipments of wireless Internet access devices, after experiencing double- and triple-digit growth through 2004, will eventually replace the PC as the preferred Internet access method, according to market researchers Cahners In-Stat Group.

The speed of such links is likely to increase dramatically in coming years, given improvements in satellite communications and other developments. The journal *Nature* recently published a story by researchers who claim they determined how to squeeze three wireless channels out of a frequency that previously supported only one, at least in crowded urban areas and within buildings. That would triple the capacity of wireless links while improving quality.

"In 15 years we will see the difference between wired and wireline disappear entirely as wireless connections become more broadband and more reliable," says James Kobielus, an analyst with The Burton Group and a *Network World* columnist. He envisions salespeople surfing the Web from the back seat of a taxi for last-minute background data while on the way to visit a potential customer. He expects we could also see advanced telemedicine applications, such as wireless-enabled monitors built into wristwatches that can alert healthcare professionals of dangerous vital signs for at-risk patients.

"In 15 years we will see the difference between wired and wireline disappear entirely as wireless connections become more broadband and more reliable."

James Kobielus
analyst, The Burton Group

Ken Hyers, senior analyst for mobile commerce at In-Stat, expects the availability of ultra-wideband services in five to seven years will enable easier access from portable devices to corporate databases, including full-color images and video. Salespeople will be able to instantly check inventory while sitting with a customer. Insurance adjusters will collect data and video at the site of a disaster and transmit it back to the home office for faster processing.

"It's going to be the enterprise that's going to drive a lot of these early applications because they have the need and the resources to pay for it," Hyers says.

Flirting with disaster

The downside to wireless and broadband to the home is that it makes life easier for hackers, who don't need any help.

"Employee-owned PCs, Palms and cell phones being used to tie into work systems really changes the security model," says John Pescatore, a research director at Gartner. Fixing it will mean embedding firewalls and other security tools into home network hardware components such as PC cards and, increasingly, hubs and routers.

Eugene Spafford, director of the Center for Education and Research in Information Assurance and Security at Purdue University, was part of a "security visionary roundtable" assembled last September by CERIAS and Accenture (formerly Andersen Consulting). The participants came up with a list of top 10 trends affecting security and issued a "call to action" paper that outlined steps required to reverse these trends, including improving software quality, investing in training and packaging basic security architectures. The paper is online at www.cerias.purdue.edu/events/accenture_cta_1q2001.pdf.

"I seriously doubt the paper will have much effect," Spafford says. "There are a lot of people who agree with it, but no one wants to be the first to slow the time to market or invest extra resources."

It's likely to take outside pressure from government or something along the lines of a consumer boycott before industry will spend the time and money to adequately address the issues raised, he says. He fully expects such pressure will come.

"The trend is one toward an increasingly complex and fragile infrastructure that's being used for more critical purposes."

Eugene Spafford
director of the Center for Education and Research in Information Assurance and Security, Purdue University

"The trend is one toward an increasingly complex and fragile infrastructure that's being used for more critical purposes," Spafford says. "At some point, the fragility is going to overtake the utility and that will bring a call to action."

Others also worry that complexity is a breeding ground for disaster. The separate events that brought down various Microsoft sites a while back present a case in point. One was attributed to a technician's mistake during a router configuration update, and the other was a denial-of-service caused by a buffer-overflow attack. So one was caused by human error in dealing with a complex system, while the other was a simple attack made possible by a complex system with known vulnerabilities.

Mark Gibbs, an independent consultant and *Network World* columnist, worries about the growing number and complexity of computer viruses. He cites the virus design dubbed Samhain written in 1998 by three self-described, "bored people somewhere in the middle of Europe."

The design describes a type of worm that is portable among operating systems, can hide indefinitely, and learns about new exploits and techniques from similar worms.

"If you can create a polymorphic worm with those kinds of attributes, that's pretty remarkable," Gibbs says. This, along with the recent discovery of the first virus for the Web server scripting language PHP, leads him to believe other dangers lurk.

Outsourcing everything

As a way of dealing with the complexity inherent in providing solid security, and of running networks in general, companies will continue to outsource.

A lack of qualified personnel is one driver behind the outsourcing trend, especially in specialized areas such as security. Schools aren't churning out qualified professionals fast enough to meet demand, says Spafford, who teaches at one of the few schools in the country that offer an undergraduate degree program in computer security. He doesn't see an end in sight, given that those who could help fix the problem — Ph.Ds and other qualified faculty — are being offered large salaries to work in industry instead. Even undergraduates get hired before receiving a diploma, he says.

The movement toward outsourcing is "a very natural evolution," says William Pulleyblank, director, exploratory server systems with IBM Research. "We outsource everything as technology reaches an appropriate state."

He cites electric power generation, which is now completely outsourced. "There was a time when everybody had their own generator," he says.

"Computing power has become much more of a utility," he says. "Companies now want to focus on their core competence, something they can do more cost effectively than anyone else."

Technology advancements are likely to help

Terraspring, a start-up in Fremont, Calif., is launching a new breed of service provider that it calls the IT infrastructure provider.

"We can give you all the hardware you need, but we can do it in seconds or minutes, not days or weeks," says Angela Tucci, a founder of Terraspring. The company developed technology that lets it quickly corral a set of servers and install one or more applications from a predefined application library. So during peak hours you can configure a collection of servers to handle e-mail, while after hours use the same servers for data crunching and reporting. Customers can also quickly add resources as needed, paying only for what they use when they use it.

"We can give you all the hard-ware you need, but we can do it in seconds or minutes, not days or weeks."

Angela Tucci
a founder of Terraspring

"We're changing the way people buy and manage computing resources," she says. "Don't go through a long procurement cycle, don't take the assets on your books, don't spend a lot of time configuring the unique possibilities of your server infrastructure."

E-commerce is another outsourcing driver, says Andrew Efstathiou, program manager at The Yankee Group consultancy.

"In a Web environment, as people are accessing enterprise systems from outside, the cost of being down is very large," he says. "Having 100% availability and rapid recoverability is a difficult thing to achieve, so firms are outsourcing to address that issue."

Breaking Moore's Law

Whether you outsource or not, you can bet that demand for computing power will continue to rise. You can also bet that vendors will step up to meet the demand, and in new ways that rewrite old axioms.

IBM Research is at work on a cellular computing architecture that uses silicon with memory and processing power resident on the same chip. Data that it takes to solve a problem is distributed among the chips. Each chip processes its part of the data, analyzes it and shares results with other processors, but only as necessary.

"There is no notion that any central part will ever look at all the data," Pulleyblank says. That means "applications can be much more efficient."

An example of this cellular architecture is Blue Gene, the computer IBM is building to study how proteins fold into various shapes, some of which cause disease. With about 1 million processors, Blue Gene is more powerful than the next 500 largest computers in the world combined, Pulleyblank says.

Whereas Blue Gene is being built for a specific function, he sees more widespread appeal for IBM's cellular computing architecture. It could be used to tackle any problem where huge data sets can be broken down and mapped to many processors. Examples include logistics applications, such as airline schedules and warehouse distribution programs.

A big advantage of the cellular architecture is scalability, Pulleyblank says. "If data gets larger and a million processors isn't enough, maybe we need two million, we can effectively extend it up to that level," he says.

"Moore's Law says that if I wait 18 months, the machine will be about twice as fast," Pulleyblank says. "If I look at a problem like protein folding, I won't get enough compute power to actually study these problems for about 10 or 11 years, and I don't want to wait that long. This is a way that lets me jump up power much faster."

A key to the cellular architecture is that it reduces the latency inherent in storing data away from the computing processor by putting the processor and memory on the same chip.

"There's a lot of work going on in that area, trying to find ways to get processing closer to memory in one form or another," says Neil Wilhelm, director of Sun Laboratories. "This is clearly an area that Sun, IBM and many others are working in because it looks like there's a lot to be gained."

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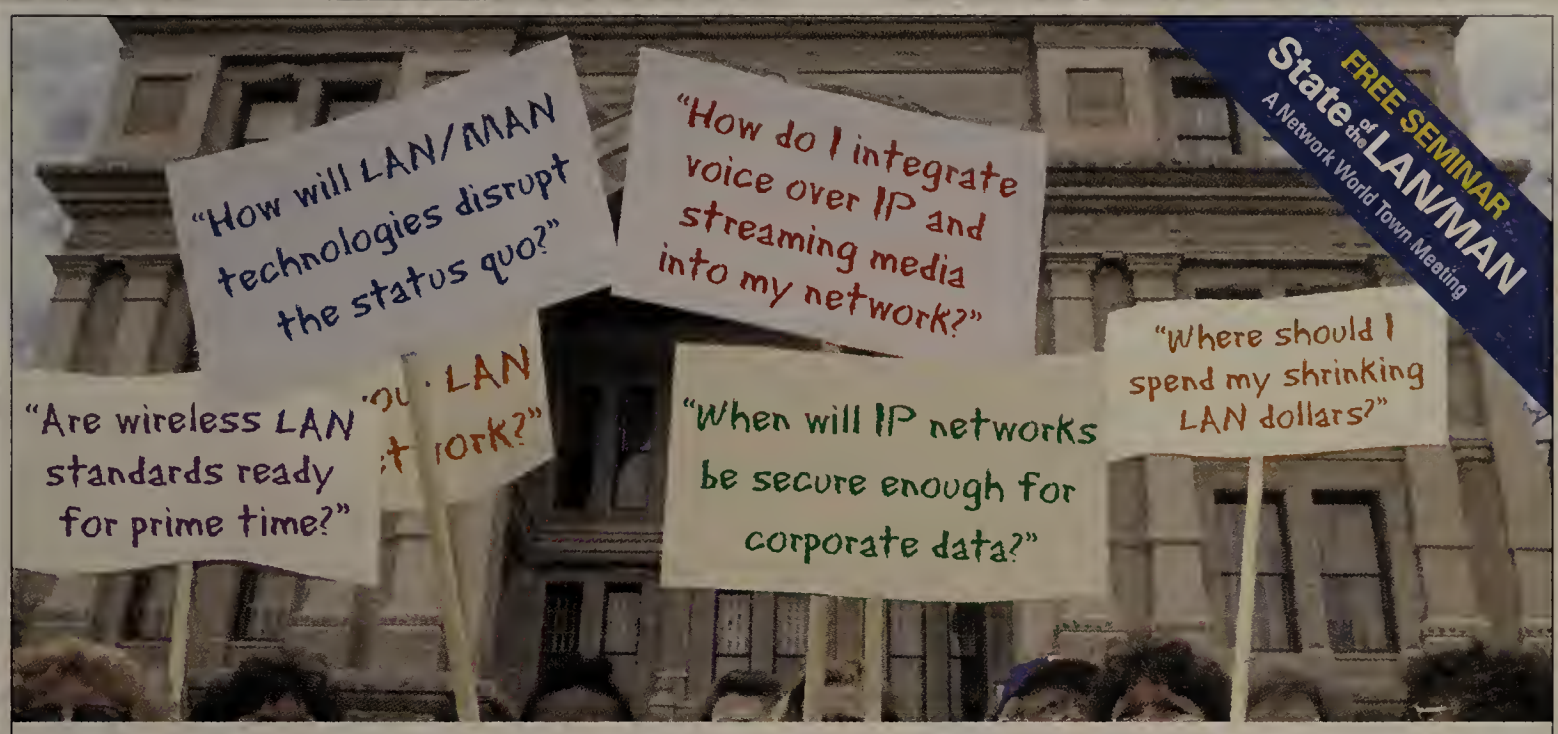

"... applications can be much more efficient ..."

William Pulleyblank
director, exploratory server systems, IBM Research

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NetworkWorld Review

Virtual private networks

Tests show a variety of top-quality gear available for enterprise users.

A flooded field for IPSec-based VPNs is good for users

■ BY JOEL SNYDER, NETWORK WORLD GLOBAL TEST ALLIANCE

While security vendors will sell you wares for any logical layer and all possible locations on your corporate network, IP Security-based VPN gateways have emerged as the most popular class of product for setting up secure, site-to-site connections.

In our evaluation of 13 products in this market, we looked at the standard manageability, performance and enterprise-focused feature criteria, but we also added a new series of interoperability tests to the mix.

In all, it was an astonishingly close race. No one product stood out as the winner across all categories. This give-and-take is reflected in our scorecard, where more than half the products are within a point of each other in the final tally. Due to the extremely close scoring, we will not be awarding a Blue Ribbon Award for this test.

Because of ambiguities in the IPSec standard specification, not every vendor's product will work with every other vendor's gear — even though each might have a "correct" protocol implementation. That makes interoperability one of the greatest challenges for VPN vendors.

We set up a hypothetical security policy for a large, multisite network and evaluated how well each VPN product could fit into that network. With multiple data centers and branch offices with switches, routers and firewalls, our test bed was designed to resemble a standard enterprise data services network. We tested interoperability of each product against every other VPN product, both in setting up initial secure connections and in maintaining long-term operation over a matter of days. Specifically, we rated how each product worked with the others, worked with our certificate authority and with popular VPN client software, and how well each handled different VPN authentication methods.

An important part of our evaluation was making products work in a full mesh. While almost every VPN vendor can do bake-off style interoperability (where they successfully negotiate a security association with one other vendor), we wanted to see what network professionals would be faced with trying to pin together a true multivendor network securely.

Our top interoperability category rating went to Secure Computing's Sidewinder. Right behind Sidewinder were products from Avaya, Check Point, Cisco, Microsoft, Nortel and Nokia. (See www.nwfusion.com, DocFinder: 6223 for an online chart showing the complete interoperability results.)

Although the objective scores based on our predefined evaluation criteria put Cisco almost at the top, we found severe restrictions in its implementation. Cisco has been both saddled and blessed with its command-line configuration interface. While some network managers love it, VPN designers will find it less than comforting. To keep VPN configuration manageable within the command line environment, Cisco allows for only a single Internet Key Exchange (IKE) policy per system. While that worked fine for our test (we wanted a single corporate policy), it wouldn't work well in an environment where IKE policy varied across sites. In fact, when we added the SafeNet client into our interoperability test (see story, page 51), we were forced to break our Cisco PIX configuration: it could work with the policy we selected, or with the SafeNet client, but not both at the same time.

We used digital certificates issued by an Entrust public-key infrastructure (PKI) server for site-to-site authentication and discovered a huge variability in how the VPNs under test interacted with this PKI. Unauthorized access to company networks is a big problem, and one that VPNs can help to solve.

Sidewinder, Nortel's Contivity 1600 and Check Point's VPN-1 all provided decent evidence that we were in control of who was coming into our network and what resources they had access to. All three products let us specify in as little or as much detail exactly what kinds of certificates were needed to get into our network. In contrast, Lucent's Access Point 1000 and Cisco's PIX 525 and IOS (Cisco entered both IOS on an optimized 7140 VPN Router platform with hardware acceleration and PIX 525 as site-to-site products with different capabilities and design goals) had a more relaxed view of access control: Once you got a certificate from the PKI, you were free to make any kind of VPN connection you wanted. This could be a killer in an extranet environment, where not everyone is sharing the same PKI and where you got your digital certificate is often just as important as what the certificate says.

Hewlett-Packard's VPN Server Appliance, RapidStream's 2000, RedCreek's Ravlin 7160 and WatchGuard's FireBox III 4500 all failed our certificate interoperability test. In the case of RedCreek and WatchGuard, neither adequately supports external certificates for site-to-site authentication.

Microsoft's Windows 2000 Server with its built-in VPN service and Lucent's Access Point supported certificates, but had trouble talking to other certificate-supporting

Tracking VPN performance

Product	Best-case packet flow (M bit/sec)	Internet mix packet flow (M bit/sec)	Worst-case packet flow (M bit/sec)	Price performance (Dollars/M bit)
Avaya VSU-100	44	20	4	$60.00
Check Point VPN-1**	106	52	14	$149.04
Cisco 7140 VPN Router	42	22	6	$420.45
Cisco PIX 525	62	56	34	$272.32
Hewlett-Packard Server Appliance	84	64	24	$126.23
Lucent Access Point 1000	182	122	22	$86.05
Microsoft Windows 2000 **	160	104	14	$21.78
Nokia CryptoCluster 2500 (3)*	110	48	12	$312.50
Nokia CryptoCluster 2500 (1)*	56	20	6	$250.00
Nortel Contivity 1600	22	20	0	$175.00
RapidStream 2000	100	54	14	$46.25
Secure Computing Sidewinder**	94	66	32	$86.29
WatchGuard Firebox III 4500	82	46	16	$108.59

We ran three sets of performance tests, evaluating each product's behavior in best-case and worst-case packet flows, as well as with a typical mix of Internet traffic. Best-case tests comprised packets of 1,440-octets, while worst-case tests comprised packets of 96 octets.

*We tested Nokia's VPN product both as a stand-alone unit and as a cluster.
**When counting price/performance numbers, we added $3,500 to vendors that were software-only (Check Point, Microsoft and Secure Computing) to pay for the hardware base.

products. For example, with Lucent's Access Point, we had to drop back to pre-shared secrets (a more compatible but less desirable authentication system) when talking to Avaya and Nokia. Additionally, the Lucent product failed when talking to Cisco's PIX with our desired policy.

HP also had problems related to strange configuration requirements in its IPSec implementation. HP either wants to always initiate the IPSec security association, or never initiate the security association. In site-to-site networks, this is rarely the way things work. Thus, we had a hard time maintaining HP security associations, because of collisions when changing keys.

WatchGuard and RapidStream also had poor interoperability results. In WatchGuard's case, its unchangeable default security policy was insecure because it uses Data Encryption Standard (instead of Triple-DES) encryption and Diffie-Hellman Group 1, so we had to make a special case configuration in all other products to match the WatchGuard inflexibility. RapidStream 2000 gave us inconsistent results, sometimes accepting security associations and then failing to pass traffic, sometimes working perfectly.

Enterprise manageability

As VPNs move out of pilot mode into implementation, configuration and management of dozens or even hundreds of VPN devices becomes a major issue. The only three products we tested that have GUIs fit for multisite, multivendor VPN management were Avaya, Check Point and Nokia. We took into account how these tools managed vendor-specific gear and how well each assisted in our interoperability scenarios.

Avaya and Nokia rose to the top of the enterprise configuration heap quickly. Both management tools use simple building blocks to define VPN network topology.

We created, modified and managed multivendor VPN configurations easily with these tools. Nokia's VPN Policy Manager GUI lets you build complex topologies: combinations of hub-and-spoke; mesh; links between the two; and individual tunnels between any two systems.

More online!

- Full interoperability results available online.
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Avaya's GUI offers less topological power, but has a stronger back end. Built on top of a Lightweight Directory Access Protocol server, this product lets multiple network managers view, edit and push changes to a large network from multiple sites. Avaya's VPN Manager GUI also has a built-in client deployment and management tool for remote access VPNs. Nortel's Contivity 1600 has a similarly powerful tool built in, but the scope does not include more than one VPN security gateway.

We evaluated Check Point's recently released version of VPN-1 and were pleased

See VPN, page 50

Net Results

3.8 RATING
Check Point VPN-1

Company: Check Point Software Technologies, (800) 429-4391, www.checkpoint.com **Price:** Starting at $11,000. **Pros:** Strong VPN and firewall collocation; good interoperability. **Cons:** High cost; requires underlying NT or Unix operating systems.

3.8 RATING
Cisco 7140 VPN Router

Company: Cisco, (408) 526-7200, www.cisco.com **Price:** $18,500. **Pros:** Many interfaces; broad product line; excellent routing. **Cons:** High cost; poor management tools; not very flexible IPSec implementation.

3.8 RATING
Lucent Access Point 1000

Company: Lucent, (888) 458-2368, www.lucent.com **Price:** Starting at $20,500. **Pros:** Excellent performance; high-end QoS and firewall built in; multiple interface options. **Cons:** Command line interface better than GUI; high cost; some IPSec weaknesses.

3.8 RATING
Nokia CryptoCluster 2500

Company: Nokia, (877) 997-9199, www.nokia.com/vpn/nokiavpn.html **Price:** $10,000. **Pros:** Excellent VPN management tools, strong interoperability. **Cons:** High price/performance in our test.

3.7 RATING
Avaya VSU-100

Company: Avaya, (908) 953-6000, www.avaya.com **Price:** $1,400 (hardware) plus $1,000 (VPNmanager 3.1, software). **Pros:** Strong management tools for companies. **Cons:** Mediocre performance in our test.

3.6 RATING
Cisco PIX 525

Company: Cisco, (408) 526-7200, www.cisco.com **Price:** Starting at $22,000. **Pros:** Very good NAT/NAPT features, firewall. **Cons:** High cost; poor management tools; not very flexible IPSec implementation.

3.4 RATING
Microsoft Windows 2000 Server

Company: Microsoft, (650) 251-2700, www.microsoft.com **Price:** $850. **Pros:** Very good price/ performance; strong interoperability. **Cons:** Disjointed VPN management interface.

3.4 RATING
Nortel Contivity 1600

Company: Nortel, (800)466-7835, www.nortelnetworks.com **Price:** $7,000. **Pros:** Good GUI for single element; well-thought-out client deployment. **Cons:** Low performance in this unit; no enterprise management tool.

3.1 RATING
Secure Computing Sidewinder Firewall/VPN

Company: Secure Computing, (800) 692-5625, www. securecomputing.com **Price:** $3,900. **Pros:** Strong interoper-ability, good price/ performance in our test. **Cons:** Fairly complex management on compartmentalized Unix operating system.

3.0 RATING
HP VPN Server Appliance

Company: Hewlett-Packard, (800) 826-4111, www.hp.com **Price:** $16,158. **Pros:** Easy to configure with flexible options; good client deployment tool. **Cons:** Odd IPSec configuration required.

2.8 RATING
RapidStream 2000

Company: RapidStream, (866) 727-4348, www.rapidstream.com **Price:** $5,000. **Pros:** Good price/ performance. **Cons:** Initial implementation not very stable.

2.7 RATING
WatchGuard Firebox III 4500

Company: WatchGuard, (206) 521-8340, www.watchguard.com **Price:** $9,990. **Pros:** Good fit-for-all WatchGuard network; excellent VPN monitoring tools. **Cons:** Poor security choices in IPSec; limited implementa-tion not very flexible.

N/A RATING
RedCreek Communications Ravlin 7160

Company: RedCreek Communications, (888) 745-3900, www.redcreek.com **Price:** $8,900. **Pros:** Simple to install and configure; nice GUI for single element. **Cons:** No global management tool; hardware reliability issues.

What's the score?

	VPN-1	Cisco 7140 Router	Access Point 1000	Crypto Cluster 2500	VSU-100	PIX 525	Windows 2000 Server	Contivity 1600	Side-winder	VPN Server Appliance	Rapid-Stream 2000	Firebox III 4500	Ravlin 7160
Management 30%	4	3.5	3	4.5	4.5	3.5	3	2.5	2	2.5	2	3	2
Interoperability 25%	4	4	3.5	4	4	4	4	4	4	2.5	2.5	1.5	3
Enterprise features 20%	4	4.5	4.5	3	3	3.5	3	4.5	3	3.5	3	3	2.5
Performance 15%	3.5	2.5	4.5	3.5	2.5	3	4	2.5	4	3.5	3.5	3	N/A
Breadth of product line 10%	3	4.4	4	3.5	4	3.5	3	3.5	3	3.5	4	3.5	3.5
TOTAL SCORE	3.8	3.8	3.8	3.8	3.7	3.6	3.4	3.4	3.1	3	2.8	2.7	N/A

Individual category scores are based on a scale of 1 to 5. **Percentages** are the weight given each category in determining the total score. ■ **Scoring Key: 5:** Exceptional showing in this category. Defines the standard of excellence. **4:** Very good showing. Although there may be room for improvement, this product was much better than the average. **3:** Average showing in this category. Product was neither especially good nor exceptionally bad. **2:** Below average. Lacked some features or lower performance than other products or than expected. **1:** Consistently subpar, or lacking features being reviewed.

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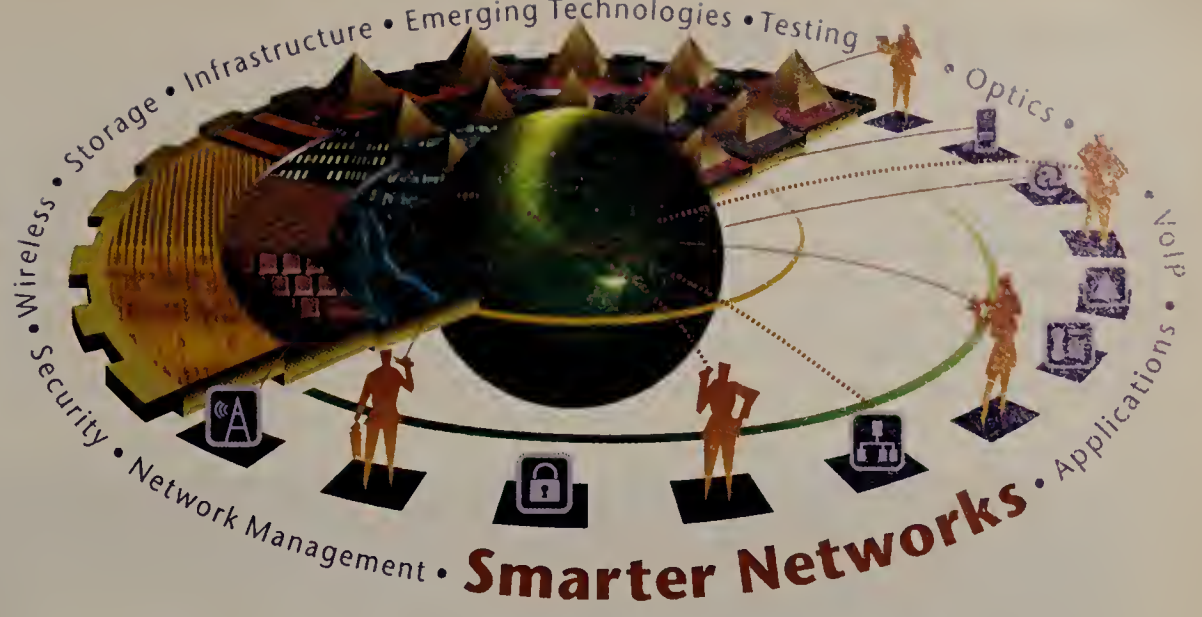

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VPN,
continued from page 48

to see that the company has come a long way in terms of VPN configurability and management since we looked at its V4.1 GUI earlier this year. Check Point's Policy Editor GUI can now handle a larger range of interoperability scenarios. Although we tracked down a few bugs in the new software, our general impression is that Check Point is focusing more on large VPNs. The Check Point GUI can easily generate meshed VPN topologies — a significant improvement from the V4.1 GUI, which tightly restricted a VPN manager's flexibility in selecting operating parameters.

Check Point's management tool also allows integration of firewall rules and VPN settings. Although Check Point's product does not support the comprehensive array of protocols and features that Lucent's Access Point does — which lets you stack firewalls and VPN tunnels in any configuration you'd ever desire — it handles 90% or more of the configurations most enterprise managers would dream up. The ability to express firewall filtering and VPN tunneling in the same rule is an essential element in merging VPN and firewall policy.

Several of the VPN management tools were not very useful in our interoperability quest. Nortel's famed Optivity tool is good for doing things to multiple Contivity boxes without having to touch each one, but doesn't really do anything for site-to-site VPN configuration, even where only Nortel systems are included. This is unfortunate because Nortel's element management (via a local Web server on the Contivity system) is the best system management tool of any product we evaluated. If Nortel could extend that management to multiple systems, it would have the knock-down winner in this category.

Lucent's optional QVPN Builder GUI went the distance in terms of managing a network of VPN devices as a single unit, but had a critical flaw: It was not designed to have anything but Lucent Access Points in the network. Because of this, we fell back to Lucent's command-line interface (CLI) for configuration. Unfortunately you can't use both the QVPN Builder and the CLI; you have to choose one. HP's management tool for its VPN Server Appliance has a similar restriction: It has some primitive capabilities to apply a single policy to multiple systems but does not have any way to integrate non-HP products into the configuration. WatchGuard's optional VPN Manager software leaves network managers in much the same boat. The lack of firewall integration of the VPN configuration also left us disappointed because WatchGuard's firewall configuration is so simple and intuitive.

Microsoft's VPN management is far from simple and intuitive. Although it is possible to create a single IPSec policy that could be applied to multiple systems — as long as they are all Win 2000 servers — the GUI is complex and confusing. After 92 screens, we still couldn't figure out whether it was better than the competition. Frankly, any security configuration tool this complex is asking for an error to happen, which is unacceptable in an enterprise network.

Cisco's new Cisco Secure Policy Manager will be a great boon to any network manager interested in using either Cisco PIX or its IOS-based systems as a firewall or VPN. With Cisco's CLI syntax slightly different from and incompatible with IOS to PIX, Cisco Secure Policy Manager wins major points for making it possible to design and synchronize firewall rules and intrusion-detection systems across multiple Cisco systems. In this case, though, "possible" doesn't mean "optimal."

Cisco Secure Policy Manager has dedicated tools for building VPN tunnels. Both mesh and hub-and-spoke topologies are supported. Unfortunately, there is no support for third-party VPN products — you have to fake out Cisco Secure Policy Manager by describing them as Cisco elements. More importantly, the VPN configuration is not well integrated with the firewall rules.

Live VPN interoperability demo

The VPNC/Network World VPN interoperability demonstration based on this testing will be featured at the VPNCON trade show in Alexandria, Va., October 15–18.

VPNC

Other enterprise features

No VPN exists in a vacuum. VPN functions may need to be combined with other parts of the enterprise network. Common additions to VPN devices on the market include firewalls, high-availability features, routing protocol support, bandwidth management and quality of service (QoS), multiple interface options (besides Fast Ethernet, which is most common), and tunnel status monitoring and reporting. Technically, these are not VPN-specific features, but enterprise managers will find them useful adjuncts in their quest to build more powerful and capable networks.

One obvious winner in the "how many features can we add to a single box" game is Cisco. Its IOS-based product includes VPN capabilities as a sideline, with industry-leading routing, multiple interfaces, high availability, traffic shaping and firewall all built into the same system.

Microsoft's Win 2000 Server could also be considered the feature king — what other VPN device can also run PowerPoint and Flight Simulator? While more relevant features, such as simple routing protocols, traffic prioritization and basic firewall, are easily available, Win 2000 Server has an advantage when it comes to database operations for remote users. Because the Win 2000 VPN software is completely integrated with the Windows Active Directory authentication system, access control for remote users can be tightly controlled and managed from any Win 2000 system.

The obvious combination of VPN and firewall features makes collocation more the rule than the exception, with virtually every product we reviewed having at least limited firewall capabilities. The two holdouts are Nokia and RedCreek. (RedCreek announced an integrated firewall in its VPN product as this review was going to press.)

We found Check Point and Secure Computing's approaches the easiest to deal with. Both offer an integrated firewall and VPN rule set. WatchGuard and HP are examples of the other extreme: The firewall and VPN are totally separate and disconnected services, which happen to share a GUI and sit on the same system.

Routing is another area where integration between firewall and VPN is important. Products like Nokia's CryptoCluster and Check Point's VPN-1 have no real internal connection between routing protocols and VPN status — tunnels come up, tunnels go down and the routing algorithm is none the wiser for it. Lucent's Access Point does an excellent job of integrating the two, representing tunnels as interfaces, which lets the routing system propagate information about the state of the VPN. This can be critical when a VPN tunnel is part of a back-up strategy or when multiple redundant paths exist across a VPN. In recent versions, Cisco's VPN products have added similar integration.

High-availability functions varied between products. Nokia, the unchallenged leader of the high-availability load sharing cluster, focuses on reliability at a single point in the network (see www.nwfusion.com, DocFinder: 6137). Other vendors, including Avaya and Nortel, built in reliability from a multisite or multilocation point of view.

Service-level monitoring and reporting can be important in secure enterprise networks. Lucent and Check Point have built-in tools to monitor the latency and loss rate of VPN tunnels and maintain an internal database of performance statistics that can be used for long-term charting or alerting purposes.

QoS is another enterprise-level feature that varies among products. For example, several of the VPN security gateways we evaluated have the ability to mark Differentiated Service bits on packets. Avaya's VSU series does this, but won't change its packet handling options based on QoS markings. This is primarily useful where other components in the network handle bandwidth management. Other products, including Nortel's Contivity and Cisco's IOS, mark and allocate bandwidth

How we did it

We used equipment from Cubix and Spirent Communications to build a test bed surrounding the VPN security gateways under test. We used the Cubix Density system running custom software to create VPN tunnels, verify connectivity between the gateways, measure up-time and display the full connectivity matrix.

We developed our test methodology with engineers from the VPN Consortium and will present a demonstration of this interoperability test at the upcoming VPNCON trade show in Alexandria, Va., from October 15—18.

We created an IP Security (IPSec) profile, which we believe a prudent network manager would want for a corporate VPN network.

This profile included Internet Key Exchange encryption algorithm of Triple-Data Encryption Standard and authentication of secure hash algorithm 1 (SHA-1) using Diffie-Hellman Group 2 (MODP-1024) and a lifetime of 8 hours; IPSec encryption algorithm was Triple-DES, authentication was SHA-1, perfect forward secrecy was enabled for Diffie-Hellman Group 2, and lifetime was one hour.

Our test bed comprised multiple data centers and branch offices with switches, routers and firewalls. We tested the interoperability of each product against every other VPN product both in setting up initial VPN connections and in maintaining long-term operation over a few days. Specifically, we rated how each product worked with each other product, with our certificate authority and popular VPN client software, and how well different VPN authentication methods worked in our hypothetical network.

To handle authentication of the security association, we used an Entrust public-key infrastructure (PKI) to pass out digital certificates to each security gateway. Because Entrust's PKI corners a significant share of the market, it was reasonable to expect all devices to support it, at least in manual enrollment mode. Some devices supported simple certificate enrollment protocol enrollment to our Entrust PKI; with others, we used manual enrollment to the Entrust server. We used preshared secrets for authentication in cases where the security gateway did not support digital certificates (or our Entrust PKI).

To capture performance for these devices, we used a set of six Nokia CryptoCluster 2500 gateways against each system being tested. This configuration is sufficient to saturate a 100M bit/sec full-duplex Ethernet network with 64-octet packets. We generated User Datagram Protocol (UDP) packets of various sizes using Spirent's gear and off the shelf test software, and measured when loss went above 0% using a precision of 2M bit/sec.

to tunnels based on configured-in rules.

Performance

We've found — both in this and in past tests — that performance of VPN devices varies widely. In many cases, vendors purposefully understate performance to drive sales to more expensive devices; in other cases, they overstate performance to make their products appear more competitive. While we did not conduct a comprehensive suite of performance tests — as that was not our primary objective for this review — we did take the opportunity to run some quick benchmarks to offer apples-to-apples comparisons of these products.

We ran three sets of performance numbers, evaluating behavior in best-case and worst-case packet flows, as well as with a typical Internet mix (see graphic, page 47). For the Internet mix, we used data collected from an Internet backbone to build a profile of approximately 50% small packets (96 octets or less), 10% large packets (1,518 octets, the Ethernet maximum transmission unit), 20% 576 octets (a common WAN MTU) and 20% assorted between 192 and 1,024 octets.

We discovered that for line speeds of up to 10M bit/sec (full duplex, about a quarter of a DS-3/T-3 circuit), any of the products can keep up — but Avaya, Nortel, RapidStream and Microsoft give you excellent price/performance ratios.

If you want to push to a full DS-3 circuit (45M bit/sec, full duplex), again using "real world" packet sizes, only Lucent's Access Point with dual cryptographic accelerators and the one-two punch of Win 2000 combined with Intel's Pro/100S cryptographic network interface cards (NIC) beat the

Client interoperability

Generally, remote access client interoperability is not a big concern. Most companies have only a small number of remote access gateways and will typically select a single vendor to provide the gateways for their users. The client software provided by the gateway vendor is then the obvious choice for the company.

Two companies have made a business of providing interoperable clients for IP Security (IPSec) access to enterprise networks. Safenet (formerly IRE) sells its Windows-only client in an OEM configuration to many VPN vendors. Network Associates' PGP division offers Windows and Macintosh versions of an IPSec client application. We invited Safenet to come in for a brief interoperability test to see how well things would work.

Results were mixed. In the best case, Nokia and Check Point Software gateways take Safenet as a completely compatible client right out of the starting gate. Some gateways, including those from Nortel, Lucent, Cisco and Secure Computing, required that we make minor changes to our profiles before they would handle Safenet clients properly. Other gateways, such as those from Avaya, Microsoft and Hewlett-Packard, were unfriendly to foreign clients. They wouldn't work unless the client looked like a gateway with a static IP address, which is not generally useful for remote access client configurations. Finally, other vendors, including Cisco with its PIX entry, the configuration of the system was so restricted that by adding client compatibility we broke site-to-site interoperability.

90M bit/sec needed to handle that circuit. By adding less than $200 worth of hardware to our system, we drove total IPSec performance of Win 2000 up to more than 160M bit/sec in the best case (large packets). Given the low cost of Pentium-based PCs, Win 2000 Server software and the Intel NICs, this particular packaging achieved price/performance ratios between 10 and 20 times better than the other vendors'. However, we note that our performance tests were done with only six IPSec security associations. As a central site system with 500 security associations, we saw total performance of our Win 2000 system drop dramatically to less than 8M bit/sec for the Internet mix.

Nokia offers a load-sharing product and we tested it in two ways: as a single standalone system (a single CryptoCluster 2500) and as a cluster (three clustered CryptoCluster 2500s). The results were fairly dramatic, showing almost linear growth in performance along with growth in cluster size.

Breadth of product line

Enterprise network managers often need to mix everything from dial-up modems to 155M bit/sec OC-3 lines in the same network. For that reason, a one-size-fits-all approach won't work in the real world. This is one reason multivendor interoperability is so important: Small-office/home-office (SOHO)-sized products from vendors such as RedCreek and WatchGuard may be the right fit for some parts, perhaps talking back to gigabit behemoths like the Nokia 5205.

At the same time, a single vendor immensely simplifies management, as we saw so dramatically, and a broad product line can be an important advantage. Therefore we also looked at the breadth of VPN product line in our rating equation. We wanted to know how well vendors' product lines reached up to data-center-sized encryption engines and stretched down to the SOHO market with inexpensive simple devices. We also evaluated how well network media other than the vanilla Fast Ethernet were included: WAN interfaces such as T-1/T-3 and ISDN can be important in keeping costs down, while Gigabit Ethernet is critical for the high-end data center.

The obvious winner in this area is Cisco's IOS. With more than a dozen chassis options, products ranging from less than $1,000 to the Internet-core-sized GSR 12000, with its six-figure price tag, and interfaces ranging from built-in modem up to Gigabit Ethernet — no one beats Cisco's IOS when it comes to breadth of product line.

However, high scores in this category don't necessarily equate to the same level of flexibility, so investigate what hardware and speeds you need in this area carefully. For example, Cisco's PIX 525 rated well because of the large number of simultaneous interfaces supported, while Nokia's CryptoCluster 2500 got the same score because they stretch from branch office to data center in speed — although Nokia only supports two interfaces on its systems.

This review shows there is room in the VPN marketplace for more than a handful of vendors. Each product evaluated has specific strengths and weaknesses; each is designed with a different kind of network, management style, VPN size and set of requirements in mind.

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Many firms make layoffs less painful for their employees with outplacement help and rehiring bonuses.

■ BY TOM DUFFY

Bill Baker, a former systems engineer for Commerce One in Harmony Park, Mich., wasn't surprised when he got laid off in late April. In fact, just a week earlier, a human resources representative at the e-commerce service provider asked him for his résumé and forwarded it to client Ford Motor, where his two superiors had recently moved hoping to avoid the same fate.

Baker collected a month's severance pay after he was let go, even though he'd only been there four months. Commerce One also set him up with the outplacement firm Spherion, which helped him buff up his résumé and hone interviewing and salary negotiation skills.

The assistance paid off. Within weeks, Baker was working as a network engineer for J&D Technology Group, an IT consultancy in nearby Clinton Township. Thanks to a different tax structure and commute, Baker now earns about $4,000 more. Still, he's got nothing but good things to say about Commerce One.

"I don't know if I'd go back to the same office, but I'd go back to work for them," he says.

Commerce One executives declined to be interviewed for the story. But as the economy continues to sputter and the number of layoffs in the tech sector continues to rise, Commerce One and a growing cadre of other companies appear to be taking a gentler and, in some cases, more progressive approach to layoffs. Outplacement, sometimes for an unlimited period of time, and incentive pay for returning employees are just a few of the tools companies are using to cushion the blow to workers and, potentially, to themselves.

PHOTO: JIM WEST

Bill Baker, working at home with daughter Annelise, quickly rebounded from a layoff, thanks to outplacement help.

"We find that particularly in the technology business they want to create an alumni group that would want to come back to work for them," says Robert Morgan, president of Spherion's human capital consulting division. "They know at some point that the economy is going to turn and they are going to either rehire these people or they are going to be customers or partners or references in other organizations that are going to impact their business."

Morgan says the intensely competitive hiring environment in the technology sector of just a year or two ago has contributed to the approach some companies have taken.

"A lot of these companies have good employee-friendly skills and built environments where keeping employees happy was important," he says. "They have applied the same skills so they can have happy alumni."

Still, that doesn't mean everybody is happy with the way they have been let go.

John Chu, of Basking Ridge, N.J., spent 23 years working for Lucent and predecessor Western Electric as a network manager in New England, and more recently doing network support in the marketing division from an office in nearby Warren, N.J.

Chu, who just turned 50, was among a first wave of about 10,500 Lucent employees let go in January. Chu "retired" on what he called a discounted Lucent pension, about $400 per month less than the full amount, which in either case wouldn't be enough for him to live on. His quarrel with Lucent was that employees who were released in a subsequent voluntary layoff were offered incentives that he wasn't offered.

"They added five years to your age and service, which for me would have undiscounted my pension," he says. "So it's worth a lot of money."

Lucent spokesman William Price says the downturn and changing business conditions dictated different approaches to the layoffs. Unfortunately for Chu, he was one of the 4% of employees let go in the initial layoff for whom the later incentives would have made the difference between a partial and full pension.

Through voluntary reductions, attrition and layoffs, Lucent shrank from about 155,000 employees to 87,000 in the past year, according to Price. Price didn't know how many of those reductions might have involved IT-related positions.

Continuing education

Charles Schwab, which has laid off about 2,000 people in the past few months and will have reduced its workforce by nearly 25% by year-end through attrition and other means, is offering rehiring bonuses of $7,500 to anyone who returns to work for the company within 18 months of being let go. In addition, the Schwab Family Foundation has put $109 million toward educational assistance for laid-off employees, who can receive up to $10,000 per year for two years to return to school, according to company spokesman Greg Gable.

"They were designed to make the transition as easy for folks as possible," Gable says of the benefits. "But it's also an effort that looks inward. The people who remain want to see that the company did as much as it could to soften the blow."

Spherion's Morgan says that kind of approach can be good for morale during otherwise difficult times.

"For those left behind it will help them decide whether they want to stay or not," Morgan says. "People are thinking, 'If this ever happens to me, how am I going to be treated?'"

Unfortunately for Mary Stipe, network manager for an Ohio tool and dye manufacturer, she knew the answer to that question. Last March, Stipe was let go after nearly three years on the job. Stipe says she received no severance pay, no outplacement and certainly no offer of a Schwab-like hire-back bonus or educational benefits.

"They called me in and said, 'Bye, don't let the door hit you on the butt on the way out,'" she says. "It was kind of ugly except for the fact that I had seen them do it before."

Duffy is a freelance writer in Haydenville, Mass. He can be reached at tomduffy62@aol.com.

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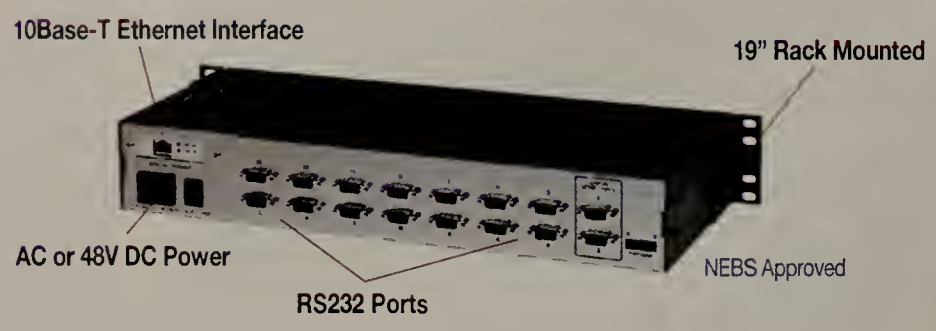

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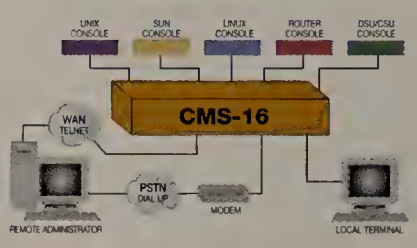

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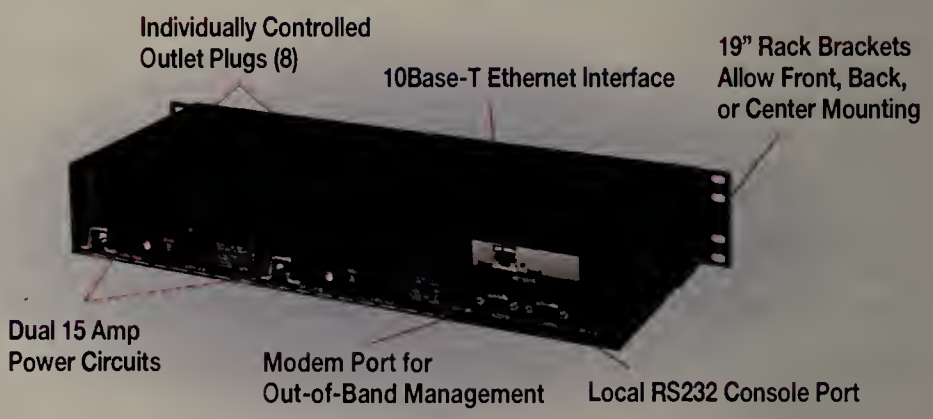

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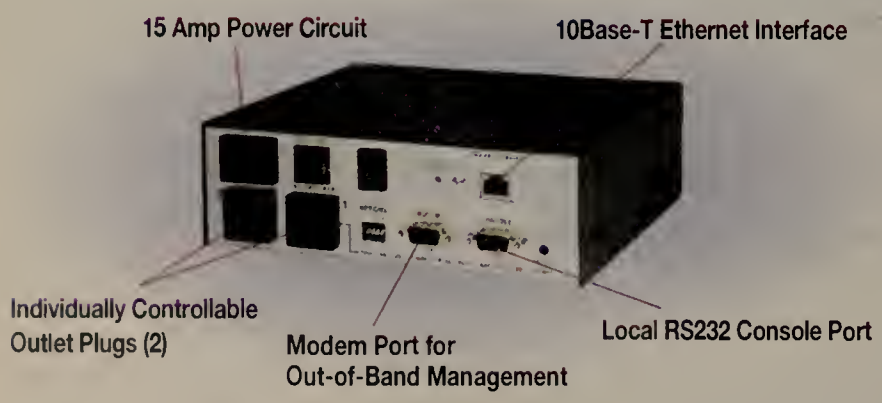

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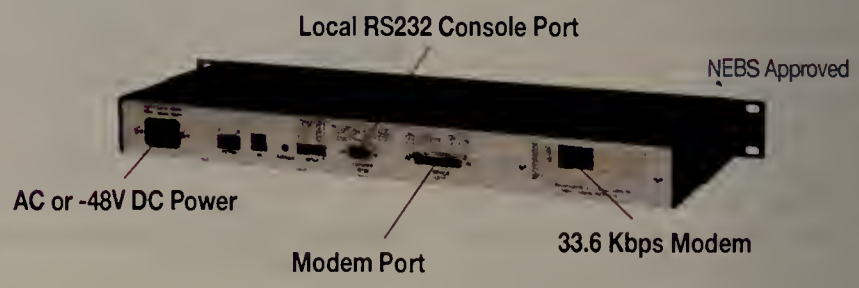

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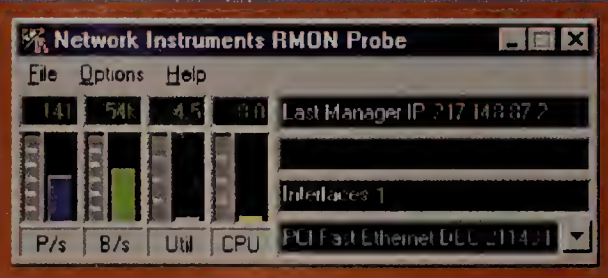

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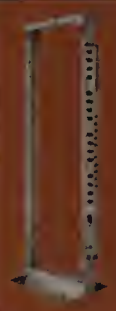

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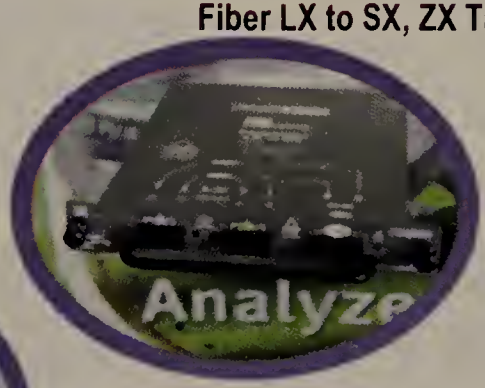

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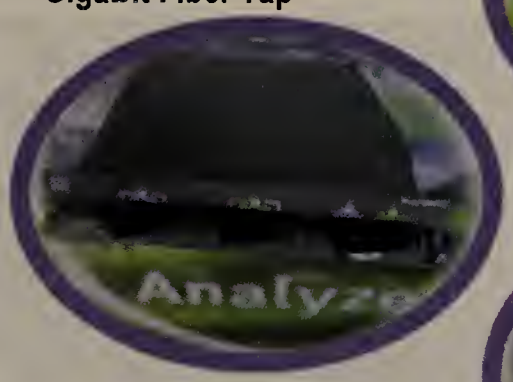

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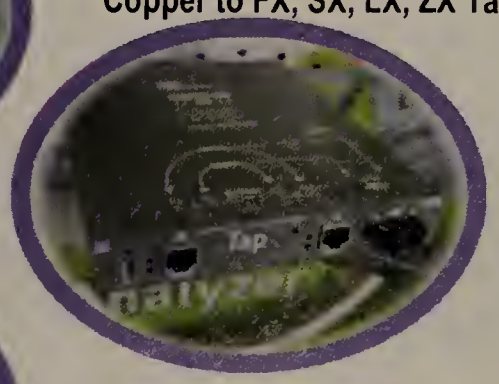

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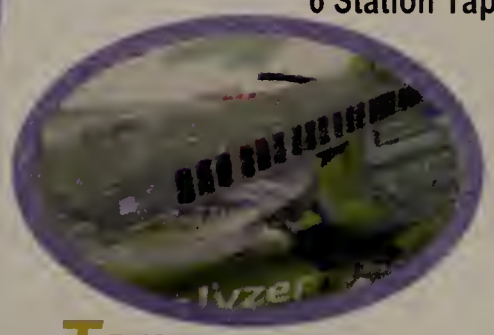

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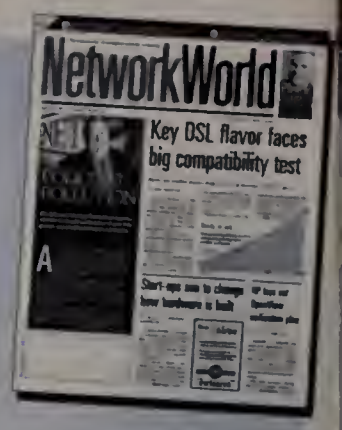

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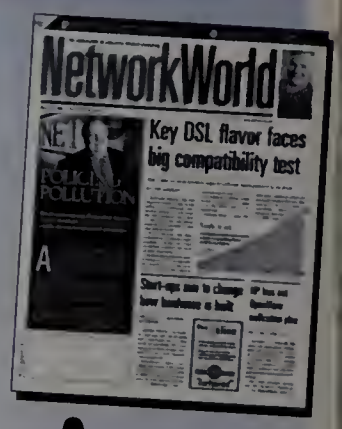

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That's changed somewhat with the turn of the century. More and more, businesses are looking for additional flexibility and power within their applications.

David Renaud, executive vice president of development, chief technology officer and co-founder of **Satmetrix Systems** in Mountain View, CA, says his company has long been committed to developing web-enabled software that measures, analyzes and allows companies to improve customer satisfaction over time. "**Satmetrix Systems** embeds market research techniques, best practices and benchmark information in its software to provide the most accurate and timely insight available," explains Renaud. "Now, we're enhancing the self-administration capabilities of our software so that web-reporting sites for customers provide greater freedom to navigate and control the system from their end."

While usability is one facet, Renaud says customers also are looking for additional features that broaden the scope and power of applications. "Our client users are now translating customer comments from customer satisfaction surveys into various languages so that the information can be presented to different audiences," he explains. "For example, a survey is conducted in a native language, say French. The company's director of customer service can translate the comments into English, using the software, and present the data to managers who might be based in the United States and use English as their first language."

Renaud says **Satmetrix Systems** has three functional areas for IT careers: 1) overall web globalization management; 2) production of web sites using HTML and XML skills, Java script, graphics and multimedia; and 3) back-end or infrastructure of web sites managing servers and configuration, hardware and software.

"Know your strengths and passions and follow them."

In today's IT environment, "know your strengths and passions and follow them," advises Renaud. "There are many directions you can pursue in web development, but you should pursue those that come most naturally. Steel yourself with the right kind of ongoing training and education. At **Satmetrix Systems**, you have the chance to work alongside clients representing the blue-chip companies of the world, from Siebel Systems and PeopleSoft to Cable & Wireless and Honda. We may be a high technology company, but what makes us stand out is our people."

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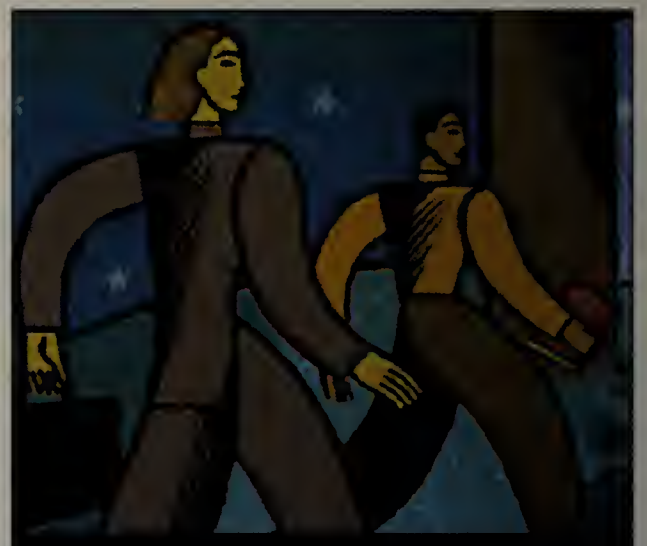

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Dissecting the Windows 2000 Server Exam

Part 2 & 3

The Installing, Configuring and Administering Microsoft Windows 2000 Server exam (#70-215) became available in June as a requirement in the Windows 2000 MCSE certification track. As of Fall 2000, it does not employ adaptive testing, but is a standard exam with a large number of verbose questions. It is administered through both Virtual University Enterprises (www.vue.com) and Prometric (www.2test.com) testing centers and, like all Microsoft exams, costs $100 to take. *Part 1 addressed Exam Specifics and the first two of the seven test objectives, with this one focusing on the other five objectives.*

Hardware Devices and Drivers

Windows 2000 fully supports Plug and Play devices.

With Windows 2000, a vendor of a third-party product is encouraged to submit the drivers and operating system files (.dll, .exe, .fon, .ocx, .ttf, .sys) to Microsoft. If Microsoft can verify that the files do not behave erratically or cause system problems or identifiable failures, Microsoft signs the file digitally. When an administrator or user attempts to install a new component on her system, the system automatically looks for the signature. If it does not find a signature, a dialog box appears, prompting the user to decide whether or not she wants to continue.

By default, a system always looks for a driver signature; this feature is known as System File Protection. The driver signature is ignored only when the user is using one of the following programs:

- Hotfix.exe
- Update.exe
- Windows Update
- Winnt32.exe

These files are needed to install/repair all or portions of the operating system and thus the driver signature is ignored for them.

The SIGVERIF.EXE utility looks for files that are not digitally signed. You can also customize the verification options: By default, signature verification search results go to the log file SIGVERIF.TXT and you are notified when unsigned files are found during searches.

SFC.EXE is used to automatically verify system files after a reboot to see if the system files were changed to unprotected copies. Unprotected files are over-written by stored copies of the system files from %systemroot%\system32\dllcache (%systemroot% is the folder into which the operating system was installed). SFC can be run only by users with the Administrator group permissions. It also requires the use of a parameter. Valid parameters are shown in Figure 3.

Figure 3: Valid SFC parameters

Parameter	Function
/CACHESIZE=	Sets the size of the file cache
/CANCEL	Stops all checks
/ENABLE	Returns to normal mode
/PURGECACHE	Clears the cache
/QUIET	Replaces files without prompting
/SCANBOOT	Checks system files on every boot
/SCANNOW	Checks system files now
/SCANONCE	Checks system files at next boot

System Performance

Two new runlevels/priorities have been added to processes, making the possibilities, from lowest to highest: Low, BelowNormal, Normal, AboveNormal, High, Realtime. The only way to change the priority of a running process is via Task Manager, which has also been enhanced with an "End Process Tree" option. The only way to start a process at a priority other than its default is to use the Start command line utility.

Windows 2000 uses the term "System State data" to refer to all the components the operating system needs to function. The "System State data" on Windows 2000 Professional is much smaller (a subset) than the "System State data" needed on Windows 2000 Server. On Professional, this includes only Boot (including system) files, the Registry and COM+ database files. On Server, this includes those entries plus Certificate Services database, SYSVOL directory, Active Directory and any cluster information.

The Backup utility–accessible under Start, Accessories, System Tools–performs backups and restores, as well as allows you to interact with the Task Scheduler to schedule jobs and make the Emergency Repair Disk. No longer limited to backing up only to tape, it can write to any media.

Storage Use

The Computer Management snap-in can be found under Administrative Tools and is divided into three sections: System Tools, Storage and Services and Applications. The Storage component provides the basis for working with disk devices and is subdivided into four other sections:

- Disk Management
- Disk Defragmenter
- Logical Drives
- Removable Storage

The heart of this section of the exam objectives resides in the Disk Management tool, and you must be a member of the Administrators group to access this tool. Replacing the Disk Administrator utility from Windows NT, Disk Management surpasses that tool in that it now allows for remote disk management, supports dynamic volumes (except on portable computers),

offers wizards for many choices and allows you to make a great many changes on-the-fly—without requiring a reboot to be active. Microsoft has changed its standard for storage significantly with the release of Windows 2000 by turning to dynamic storage. The entire disk must first be converted to dynamic storage, then you can create and alter volumes without ever needing to shutdown and restart the system for the changes to take effect. By default, every disk starts as the basic type, but can be upgraded to dynamic (unless it is removable).

When dynamic, the pop-up menu for each volume contains the same choices as those for basic, plus the following options as well:

- **Extend Volume**. This option allows you to dynamically change the size of the volume (available only on NTFS volumes). If the volume was originally created on a basic disk, it cannot be extended. If the volume was first created on a dynamic disk, it can be extended.
- **Add Mirror**. With this option, you can enable fault tolerance via mirroring if more than one drive is installed.
- **Reactivate Volume**. This option is available only if the volume is not currently activated.
- **Delete Volume**. This option forces the loss of all data and the space becomes unallocated.

Within Disk Management, there are two frames: the top frame shows each volume, its file system, status and capacity, while the bottom frame shows each disk–including the CD-ROM and the volumes on it. Windows 2000 also includes a disk defragmenter–a menu option that appeared in previous versions of the operating system–but it could never be selected because no such utility was included with the core operating system.

Quotas can be configured only if the drive is NTFS. They allow you to configure the storage limits for users. By default, quota management is not enabled; it must be enabled before any other options can be set. The check box labeled Deny Disk Space to Users Exceeding Quota Limit prevents users from saving their files; when the option is not checked, users merely get a warning. With the last two options, you can specify what happens when a user exceeds the limit; the program can log events or give warnings. (These two values can be configured independently of one another).

Network Connections

No longer just one of multiple protocols that you can choose, TCP/IP is now the required protocol. It is required for all the features new to Windows 2000 that rely upon Active Directory and other services. TCP/IP can have host names resolved to IP addresses with the use of DNS servers (which now interact with WINS servers), and can have IP addresses automatically issued through the use of DHCP servers. In the absence of DHCP or manual addressing, Windows 2000 uses Automatic IP Addressing to assign hosts addresses in the 169.254.x.x range.

Besides TCP/IP, there is also support for (but not default installation of) four other protocols:

- NetBEUI – for older Microsoft clients.
- NWLink – for communication with NetWare servers.
- AppleTalk – for Macintosh clients.
- DLC – for communicating with mainframes and older network printers (newer network printers use TCP/IP).

There are two protocols to use for creating Virtual Private Networks (VPNs):

- PPTP – Point-to-Point-Tunneling Protocol. This one was included with NT 4.0 and is an expansion of the PPP protocol. This protocol uses MPPE encryption.
- L2TP – Layer 2 Tunneling Protocol. New to Microsoft operating systems, it is not new at all, having been used by other vendors for years. IPSec is the encryption it utilizes.

Security

The Encrypting File System (EFS) allows you to toggle an attribute for a file or folder just as you would any other, and it protects the contents. If the object you select is a folder, all contents of the folder–files, subfolders and so on–also become encrypted. Files that are pasted into an encrypted folder become encrypted as well, but files that are placed in the folder with drag-and-drop do not become encrypted automatically.

In order to use EFS, the file system must be NTFS and the files must not be compressed. Some files–system files in particular–cannot be compressed no matter what other conditions exist. If you move or copy an encrypted file to one of these partitions, it automatically becomes unencrypted.

From the time a file is encrypted, a digital code associated with the user (encryption certificate) is assigned to it. This allows the encrypting user to open and work with the file exactly as if it were unencrypted, but prevents anyone else from doing so. Because the file can only be opened by the encrypting user, this makes EFS perfect for personal data, but unusable on any data you want to share.

You can use the Export command in the Certificates snap-in to copy your file encryption certificates to another location–such as a floppy drive. Doing so will allow you to unencrypt your files in the event of a restore operation being necessary after a media failure (at which time you can use the Import command to bring them back from the floppy).

Group Policies and the Group Policy Editor (gpedit) are new and exclusive to Windows 2000. For Windows NT and 9x clients, you must still use System Policies, which can be created with the System Policy Editor (poledit).

Summary

The objectives for the Windows 2000 Server exam cover a lot of ground. While appearing to walk through all the features of the operating system, they truly focus on those items that are new. With a little studying, and a lot of hands-on experience with the operating system, you will be able to pass this exam and be well on your way to being certified as a Windows 2000 MCSE. ■

For more information on Part I of "Dissecting the Windows 2000 Server Exam" please refer to the 9/24/01 edition of ComputerWorld, InfoWorld and Network World.

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'Net authentication gains attention

New alliance to focus on identity management, could challenge Microsoft's Passport.

BY JOHN FONTANA

The topic of user authentication on the Internet ignited last week as Sun and 32 other end-user and vendor organizations joined forces — called the Liberty Alliance Project — to create a universal single sign-on mechanism.

The previous week, Microsoft announced plans to open its Passport authentication service to make it part of an Internet-wide identity system. AOL Time Warner is said to be working on a similar project called Magic Carpet.

The Liberty Alliance Project, launched last week by Sun, General Motors, Bank of America, American Airlines and others, was long on promises and short on details. That led many to believe it was a hasty reaction to Microsoft's change in stance on Passport, which has been criticized for privacy and other issues.

Authentication, which is synonymous with identity management, is designed to validate end users' identities, and provide preferences and profiles to get personalized service on the Internet and corporate networks.

It's key for managing Web services, which promise to deliver software as a service over the Internet, and e-commerce. Both require a connection with an authenticated user to control access to services and track billing.

"If we are going to go beyond the content stage of the Web and have applications run within the the Web, then managing identity is one of the more crucial problems to solve," says Jamie Lewis, president of The Burton Group.

"The benefit to having an authentication system that works across the Web is that it reduces the cost of administering systems," says Tony Scott, CTO for information and systems at GM. "Identity management takes the hassle and complexity out of managing user and personal information."

Today, GM incurs the overhead of administering access for partners to tap into its network. Scott says an identity management system would greatly reduce that overhead.

But developing a standard system won't be easy. Other efforts including Secure Multi-purpose Internet Mail Extensions for secure mail and Kerberos — itself an authentication mechanism — have failed to scale to the Internet.

Many experts are encouraged by the interest in identity management from major vendors, but fear it could degenerate into a quagmire that fails to produce a universal system.

"We don't want a Java vs. [Component Object Model] battle to come into identity management," says Dana Gardner, an analyst with Aberdeen Group. "We need a public standard administered through some quasi-independent group." ■

Checking IDs

The Liberty Alliance Project, established last week by 33 vendor and end-user organizations, has three goals in creating an identity system that can function across the Internet.

1. Allow individual consumers and businesses to maintain personal information securely.
2. Provide a universal open standard for single sign-on.
3. Provide an open standard for network identity spanning all network devices.

Servers

continued from page 14

partitioning capabilities. Regatta features a self-healing system, a network of more than 5,600 sensors spread throughout the server to detect internal errors and take corrective action.

Regatta will compete with Sun's Sun Fire 15K, which features 16 to 106 of the company's UltraSparc III 900-MHz Reduced Instruction Set Computing (RISC) processors. The server is the company's largest ever.

HP has its 16-way rp8400 Unix server and Superdome, which boasts 64 processors. The Sun Fire 15K can be divided into 18 partitions; HP's Superdome currently supports 16.

While hardware and power are differentiators (see graphic), a major variation between the three companies is their operating system and processor strategies.

HP has pledged future support for Intel's Itanium Processor Family and Windows on Superdome and the rp8400. Sun is vigilant in its support of Solaris and its RISC processor family, the UltraSparc. Regatta uses AIX 5L, IBM's Unix, and will support Linux in a future release.

Those differences should affect the way users plan, experts say. For example, a company looking to use a server partition to support Windows and Unix in the future may want to look at HP's systems, says Steve Josselyn, a research director at IDC. "Anyone who buys into the HP product family will have the ability to run Windows or Unix [in the future]."

At least one user likes having the option of running Windows programs.

"We do research and development for the Navy specifically in signal and image processing and command, control and communications," says Lynn Parnell, program manager at the Navy High Performance Computing Office in San Diego. "Both of these areas require high-performance computing capability where we use emulation. In particular the Navy has embarked [on a program] to put in Windows-based machines. When Superdome runs Windows under the Intel McKinley platform, we will be able to migrate Unix software and systems to Windows."

Other users are looking to consolidate systems. HP and Sun will not only have to convince users that Unix is up to the task of serving as a viable alternative to the mainframe, but that consolidation is a cost-effective alternative. And shipping systems that run Unix rather than a proprietary mainframe-based operating system appears to be at the heart of that.

Consolidation has not been very popular in Windows environments because "Windows systems need to be periodically rebooted to clean up memory, and you can't partition to keep workloads separate on Windows servers," says Aberdeen Group research director Gordon Haff. ■

Server deluxe

New high-end servers from Sun, HP and IBM compete for transaction and scientific computing applications.

Feature	Sun Fire 15K	IBM Regatta pSeries eServer	HP Server rp8400
Processor type	Sparc III	Power4	PA-RISC current; PA-RISC and Itanium (future)
Number of processors	16 to 106	32	16
Number of partitions	18	N/A	2 to 16
Processor speed	900 MHz to 1.5 GHz	1 GHz current	750 MHz
Memory	576G bytes; 1 terabyte (future)	64G to 256G bytes	256G bytes; 1 terabyte (future)
Operating system	Solaris	AIX 5L and Linux Linux (future)	HP-UX 11i; Windows and
Price	From $73,000 to $251,000	N/A	Starts at $124,000

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Exchange
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the .Net platform."

In essence, Exchange becomes a service to a much broader development platform than it creates by itself.

Development tool vendor IT Factory will demonstrate during the conference keynote address a .Net application that uses a series of Web services developed on top of Exchange. In this example, the Web services will be used to locate satellite-TV installers, check their calendars and schedule time for work to be completed.

Development tool vendor IT Factory will demonstrate at the conference keynote address a .Net application that uses a series of Web services developed on top of Exchange.

The services also rely on other .Net servers including Win 2000/Active Directory to identify qualified installers and Mobile Information Service for wireless notification, but Exchange handles the workflow, scheduling and messaging.

"The whole concept of Web services is abstracting the technology and creating an interface any application can use," says Robert Ginsburg, CTO of IT Factory. "The Web services provide access to Exchange's scheduling, task management, messaging. Those collaborative pieces become a middleware API or Web service."

Exchange evolution

And those Web services open possibilities, such as running Exchange services across corporate boundaries and seamlessly adding and deleting items on calendars between partners — a task that cannot be done today.

"In Exchange you have all this data and these services, and you would like to use that in other places. You can start to do that with Web services," says Chris Baker, lead product manager for Exchange.

As part of the evolution, Exchange will undergo some structural changes, losing its message and data store called the Web Storage System, instead relying on an SQL Server-based technology code-named Yukon, a universal repository that stores structured and unstructured data. However, the transformation won't happen for a couple of years, according to Baker.

Yukon will become an underlying data storage service of .Net, a kind of object store that can hold various file formats, store and process native XML data, and be accessed by a host of wired and wireless devices.

Microsoft will have to clearly articulate the .Net benefits to the corporate user, something that it has not done effectively.

"We are not so concerned with how to code Web services, we want to see how .Net translates into our business strategy, how it improves collaboration and knowledge sharing," says one IT executive who asked not to be named. "We think it will be 2003 before we can really think about implementing any of this stuff."

But Microsoft is planting the seeds for evolution. In Orlando, it will hand out an Exchange Developer Enablement Kit that will include sample code and resources that detail how to build Web services on top of Exchange. One of those samples is a Web service that looks up free/busy time on a calendar. Other Web services, such as searching contact information and engaging workflow services, will follow, company officials say.

Conference preview

Also on the agenda, Microsoft is expected to announce that it has completed development of its Application Management Pack for Microsoft Operations Manager (MOM). The pack, which will ship before year-end, includes an Exchange module for monitoring the events and performance of the server. MOM provides a single view of the Exchange system, helps monitor service-level agreements and provides alerts before trouble occurs.

Microsoft also will announce beta 2 of Mobile Information Server 2002, which will support wireless synchronization between PocketPC 2002 devices and Exchange server.

Also, Service Pack 2 for Exchange 2002 will not be released at the show but will ship before year-end. It includes enhancements to Outlook Web Access and a mergers-and-acquisition migration tool for merging one Exchange 2000 environment into another.

Microsoft also will detail forthcoming Exchange support for Windows .Net Server, expected to ship early next year. ■

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Exchange in a .Net world

Microsoft this week will lay out the future of Exchange as a key piece of its .Net platform for supporting Web services. In essence, Exchange will become a module providing its calendaring, messaging and workflow services as Web services and chunks of code that can be reused in multiple applications.

.Net software stack

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